MODEL AIRPLANE NEWS

OCTOBER 1951 - 25 CENTS

NATIONALS PICTURES AND WINNERS

Spectators howl approval when the combat event gets under way. Team combat flying is stealing the show in u-control circles. A good ship, sharp timing, plenty of nerve, and cagey manuevering are the prime requisites in this slam-bang event. Attacks, evasions, and kills are the basic flying fundamentals of this new exciting event.

Plymouth rules allow a streamer 8′ long attached to the ship with a 2′ string leader. Points are given for attacks and evasions. Remaining lengths of streamers add or subtract points to the flyer's score. The ultimate is a clean kill. A kill is scored when one opponent cuts the streamer off completely. A collision voids the score of the pilot at fault. These are the fundamentals.

Hi Johnson and Hobby Bobby Enright have come up with a novel idea. Pilots wanting to fly combat events would have something to work for even though not at contests. Points would be given under the supervision of any Academy Leader Member. Here's the way it works: In combat sessions one small bomb decal would be given each pilot for a kill or win. Ten bombs would win a silver star award. Ten star awards would win a silver winged ace award. Ten silver winged ace awards would win a gold winged ace award. The golden ace awards would be won after 100 kills or wins. There would be no points given except for the short cut of ribbon or a kill. Flights would be made in pairs and pilots would be matched according to the insignias on the side of their ships. Opponents could easily be chosen this way.

• • •

Our good friend Bob Ottoman, the *Flat Top* man, has been stacking up more hardware with his free-flight jobs. Bob hit the bell with a perfect thirty minute total time at the Portland *Stardusters* contest. He has applied for a tie of the A.M.A. record held by Butch Corbly of San Diego who made his record with his old reliable *Sailplane*. Ottoman has designed three classes of *Flat Tops*—36″, 56″, and 66″, and has been cleaning house with them. Who polishes the hardware, Bob? So far Bob's wins have totaled 12 first, 3 seconds, and 2 thirds for the 1951 season.

• • •

The Woonsocket Area Flying Fools Modelers have taken the bull by the horns and are out for their own flying site. Seems these lads are a bit griped about being kicked off local ball parks and other juicy flying sites. The Woonsocket lads are after the elusive buck by organizing a paper drive as well as a bond drive. The boys have a mighty fine punch line—"When there's been plenty of gravy, we've had plenty of members to dip into it. This time only those who help produce it will get a share in it."

This year the Woonsocket Flying Fair is expected to be the biggest yet with prizes of over two thousand dollars. Veterans organizations, civic groups, political figures, merchants, etc., are lining up behind the contest committee to help make Woonsocket model conscious. These lads and their backers are out to get a flying field, and it looks from here like they'll get it. Here's one city that is looking out for welfare of its youth. They are taking a leading part in providing an outlet for the creative instincts and surplus energy of the kids who are hanging around with time on their hands. The town is going all out for the modelers so they in turn are bending all efforts to make the most of it.

This "ball of fire" outfit is now in the process of re-organizing its club to form a corporation of all active members who will constitute a permanent board of trustees for the club property. They will be the real club and will have the final say on all matters of club policy. All others members will be recruited on a yearly basis only, and will be subject to the approval of the governing board. The Manville Youth Center under Bob Shields, wants the club to go over and help set up a program for youth activities, while the Amvets of Woonsocket want to co-ordinate the work of its youth committee with the proposed club program. Necessary facilities will be provided. Everyone is getting on the ball to push the mass youth movement, from senators and congressmen to Woonsocket's own Attorney General of the United States, McGrath. Will you other cities of the good old U. S. please take note!

The club guarantees that it will separate the sheep from the goats. Johnny-come-latelies who try to cash in on all of (*Continued on page 4*)

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SCRAP BOX

(Continued from page 1)

the work at the last minute will probably have the gate slammed in their faces. Nice going Woonsocket—we sincerely hope you make the rest of the model clubs that are in the doldrums sit up and take notice.

* * *

The Lake Erie Gas Model Club is one of the most active clubs in Cleveland due to its initiative and fine cooperation of its thirty-five members. Members, both beginners and experts, endeavor to bring the model hobby to the thousands of youngsters of Cleveland. Air circuses are staged for orphanages, schools, and many other welfare groups. Take a bow, Lew Silvey of the Cleveland Community Fund. We understand that you are the one responsible for making the circuses at the Red Feather Agencies such a success. We've had the opportunity to help stage a few shows for the underprivileged kids here in California and believe us, the youngsters really enjoyed it. You Lake Erie modelers are right on the beam. Carry on and keep those kids happy. We'd like to see more clubs get in the act and fly exhibition for the kids who have never seen flying models.

* * *

The big engine and glo-plug scare, shortages, etc., due to the Korean war, brought up an interesting topic—the Diesel engine. Our good friend, Ted Buxton of England, tells us that the British modelers have been making tests of our *.099* and AA engines. Ted tells us that over there the boys are convinced, both from B.H.P. curves and experience, that the glo jobs are not as powerful as the diesels of equivalent size. In comparison with one of our outstanding *.049* jobs swinging a 5"/3" prop that was supplied, one better Diesel (.031) turns a 7"/4" the same speed. The British modelers go to meets via the bus and subway and the smaller ships of around 150 sq. inches are the popular ones.

The famed English Bowden trophy, formerly awarded for Precision Flight, is now going to be given for the payload event. The "PAA Load" is in the form of one eight-ounce pilot. Pan-American Airways has offered to present souvenir trophies to the winners of the first official payload event to be held in England. We'll be very interested in the performance of the powerful AA diesels in this event. Looks like their power should pay off here.

* * *

Eighteen thousand spectators watched 75 contestants fight a 45 knot wind to participate in the First Sheppard Air Force Model Airplane Meet in Texas. Contestants came from other bases to compete in the minor hurricane. Lt. Harry G. Vogler Jr. C.D'd the meet. Pat Massey and Babe Hall of Pampa teamed up to walk off with the high point trophy for the meet. Their

Mac *49* job turned in an official speed of 129.48 m.p.h.

* * *

Endurance flying is now giving a flock of modelers the "urge." Some rules have been set up. The main idea of the event is to see how long the flyer can keep his ship in the air without refueling. Test flights have been made with many different types of ships and engines. Naturally, to get top time a modeler should build a ship that will carry a phenomenal gas load and have an engine with low fuel consumption and plenty of power. Bury a couple of quarts of fuel in the fuselage, wing, or any other place that will work and get the ship into the air. Have a couple of strong armed helpers to get on the handle when the old back muscles start to scream. There's no ruling on engine size or ship design, as long as it's u-control. If you think this event is a cinch, get the drawing board out and start in. We'd like to get some results of your efforts if you take a whirl at this type of flying. What a testing ground for engines, glo-plugs, fuel, pilots, etc.

Bernice Jaynes of San Franciso racked up a nice endurance flight of 1 hour 25 minutes with her Anderson *Spitfire 60* job. O & R glo fuel was used to fly the 821 laps at an average speed of 48 m.p.h. Take-off weight 7 lbs. 13 oz.; weight at end of flight 4 lbs. 4 oz. Mileage 117 per gallon; total distance flown 68.4 miles; amount of fuel used 2-1/3 quarts.

Wouldn't be surprised to see everyone going to work on one of these jobs. Let's hear from you.

* * *

A modeler from Tulsa, Oklahoma, would like to make a few statements about flyers entering as a team in model meets. This opinion is evidentally shared by many so we'll quote: "The 'team type' contestant is recognized under the AMA rules but the rule is not clear on just who should build the model or models that are being flown. It states that all team members must actually engage in the construction but this could be loosely construed as meaning the glueing in of a couple of ribs or putting on a coat of dope. By teaming up and loosely complying with the rules, it allows up to three contestants to combine their models and compete against the lone modeler. You can see this would be very advantageous on a high point award basis—twice as many planes could be constructed for a multitude of events with only one fellow on the team required to fly the models. In u-control this 'flying rule' could be construed to apply to either team member. If the model is hand launched this becomes as much of the flying procedure as the fellow in the middle of the circle actually controlling the model." This modeler, as do many others, feels that the team entry should be (*Continued on page 36*)

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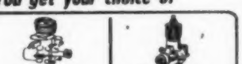

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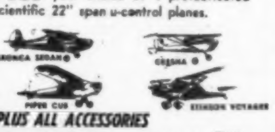

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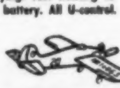

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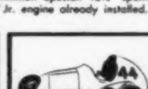

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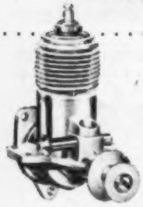

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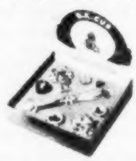

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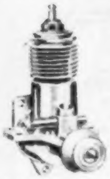

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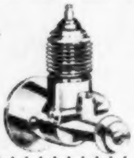

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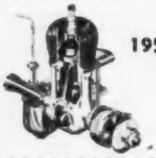

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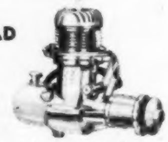

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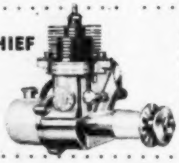

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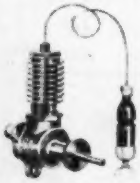

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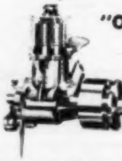

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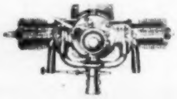

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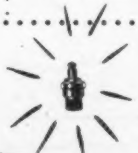

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by DICK EALY

"There is more than one way to skin a cat" is an old saying that can be applied to model aircraft also, as there is more than one way to fly any model. An expert knows these various "set-ups," but since this article is primarily for the average Joe, we present one "set-up" for each type ship to avoid confusion and disaster to the newcomer.

We have asked well-known builders of each type to release his favorite method of flying for readers of MODEL AIRPLANE NEWS, and wish to express our thanks for their "secret weapons." Study the three-view diagram that interests you and read the corresponding text carefully.

FREE-FLIGHT GAS: Bob Holland won the 1948 National Championship at Olathe, Kansas. Those who know Bob well and have seen his craftmanship can well understand why he deserves this highest honor. This is the "set-up" used by Bob in flying his gas jobs. It is very simple and novices will find it pays off with beautiful flights.

The airfoil is similar to the N.A.C.A. 4412 but is reduced to ten percent thickness. It is set at three degrees incidence. The horizontal tail is a flat-bottomed airfoil of seven percent thickness and mounted at two de-

grees incidence. The vertical rudder is mounted perfectly straight. The engine is mounted with no downthrust but has five degrees left to make the model turn in left circles under power. With this set-up the left wingtip panel must be warped down (wash-in) on the trailing edge about two or three degrees to prevent the ship from spiraling in under power. The center of gravity should be 75 degrees back from the leading edge.

Early morning or late evening when the air is calm is best for testing. Hand glide the model first until the ship makes a long flat glide, circling to the left. Drag of the warped left wing will cause this left circle. Next set engine timer to run five seconds. This is very important as you do not want the ship to come down under power if it is not perfectly adjusted. This short time will enable the ship to recover and glide down. Start engine and run up to top R.P.M., then slow it down by making carburetor mixture a little rich. Hand launch the ship into the wind—if there is any at the time. The model should climb steeply and in left circles, then go into a flat left glide when the engine stops. If ship shows tight banks without climbing, this can be remedied by lessening the left-thrust to two or three degrees. With each following flight the engine run may be increased by two or three seconds at a time, not more. Also the motor may be leaned out a little more with each flight until you reach maximum performance.

OUTDOOR RUBBER: Andrew Petersen, 1949 U. S. Wakefield team member, uses this adjustment for the stick model shown. It may be applied to all types and sizes of rubber models. He uses a Ritz airfoil with McBride B-7 camber set at four degrees incidence. The horizontal tail surface has the same airfoil section set at zero incidence. The prop is a 15 in. dia., free-wheeling type, powered with 22 strands of 3/16" (T56) rubber on this 190 sq. in. model. The thrust line has two degrees down and one degree right. The rudder is offset to the right eight degrees in order to offset torque. The C.G. is 66 per cent of the chord back from the leading edge.

Pick a time when there is calm air to test fly your model. Hand glide the ship first and adjust the wing fore or aft to obtain the proper balance. It should glide flat, circle to the right before any power is applied. Wind the model by hand for about a row of knots and hand launch the ship. It should climb to the right and continue circling to the right after power is exhausted. Now the ship can be fully wound by stretching the rubber three times the normal length, winding as you come in toward the ship. Again hand launch the ship in a climbing angle.

The model under power climbs in right circles and continues in the same direction throughout the glide. If the power circle becomes too light, the climb is destroyed and the model assumes a normal nose-up attitude only after the initial power burst is exhausted. This condition is remedied by reducing the amount of right-thrust.

INDOOR RUBBER: Frank Cummings won the 1947 National Championship held at Minneapolis. His indoor ships played a big part in winning and a little later set the World Indoor Stick record of 29 min. 23.5 sec. at the Santa Ana blimp hangar. Frank probably has more flights over 25 min. than any other builder. His craftsmanship is unexcelled as shown in the ultra light weight of his ship. The set-up shown here is for his class C indoor record stick model, but the same applies to cabin models.

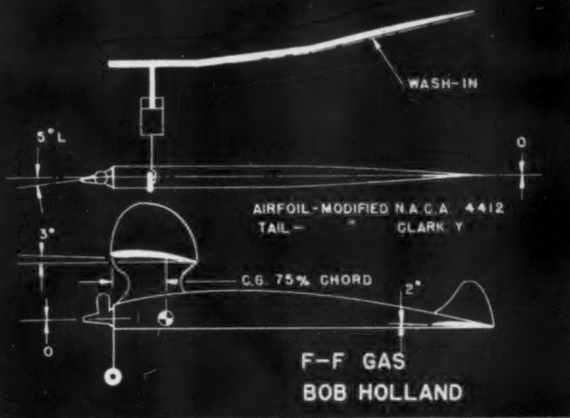
Frank uses a relatively thin airfoil which is only 5-1/16" thick on a 5-1/2" chord. Maximum camber is 40 percent back from the leading edge. The wing has two and one-half degrees incidence. The horizontal tail uses the same section mounted at zero degrees. The vertical rudder has 13 degrees left turn. There is no side or down thrust in the propeller. Frank compensates torque by offsetting wing 5/16" on the left wing. To find wing position, assemble completed motor stick with prop, rubber, tail. Balance this assembly and mark lightly with a pencil. Glue in paper wing mounting tubes so that 40 percent mark falls on the C.G. pencil mark. The center wing panel should have 1/16" wash-in at the dihedral break (trailing edge warped down). The left wingtip should have slightly more wash-in.

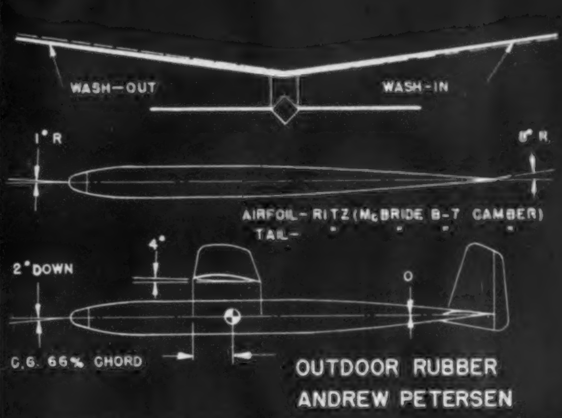
Careless handling is more responsible for breaking indoor ships, so be very careful (*Continued on page* 42)

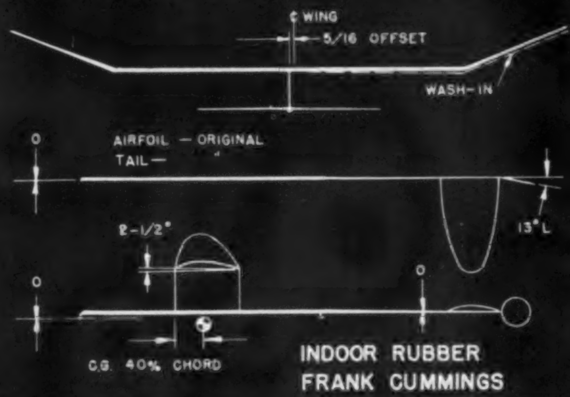
Lew Mahieu, holder of both free flight and speed records, with his *Torp*-powered *Zeke*. Ship widely built and flown during the 1950-51 seasons.

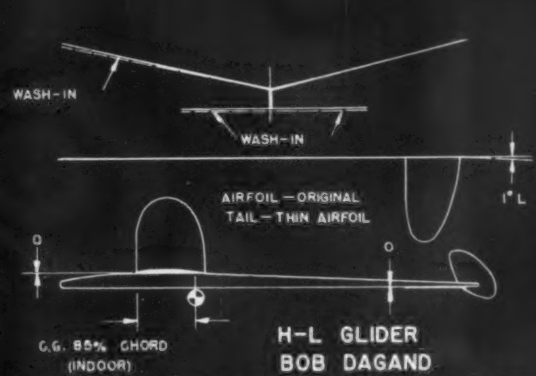
"Madman" Yates, who put the stunt in modern stunting checks his ignition, Orwick-powered *Madman*. Isn't afraid to put on a swell paint job!

Off we go! In any of the control line events a good helper is an asset. Do you look for rocks, snags that may catch those lines during take-off?

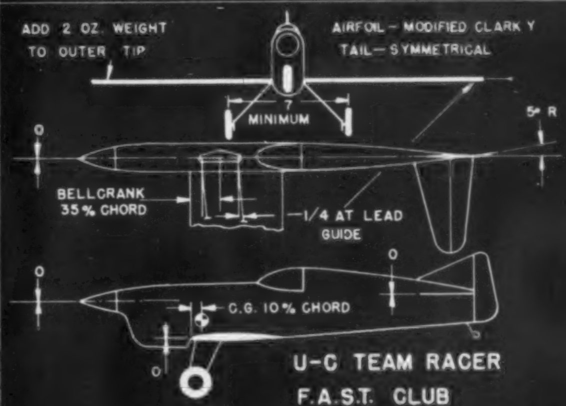

WASH-IN
5° L
0
AIRFOIL-MODIFIED N.A.C.A. 4412
TAIL- " CLARK Y
3°
C.G. 75% CHORD
2°
0
F-F GAS
BOB HOLLAND

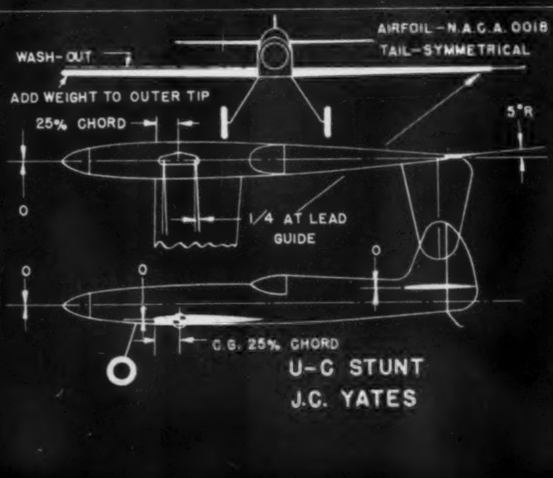

WASH-OUT
WASH-IN
1° R
8° R
AIRFOIL- RITZ (McBRIDE B-7 CAMBER)
TAIL- " " " "
4°
2° DOWN
0
C.G. 66% CHORD
OUTDOOR RUBBER
ANDREW PETERSEN

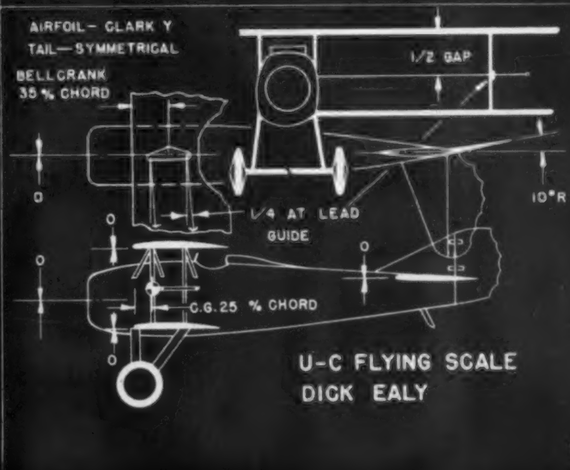

℄ WING
5/16 OFFSET
WASH-IN
0
AIRFOIL - ORIGINAL
TAIL- "
13° L
2-1/2°
0
0
C.G. 40% CHORD
INDOOR RUBBER
FRANK CUMMINGS

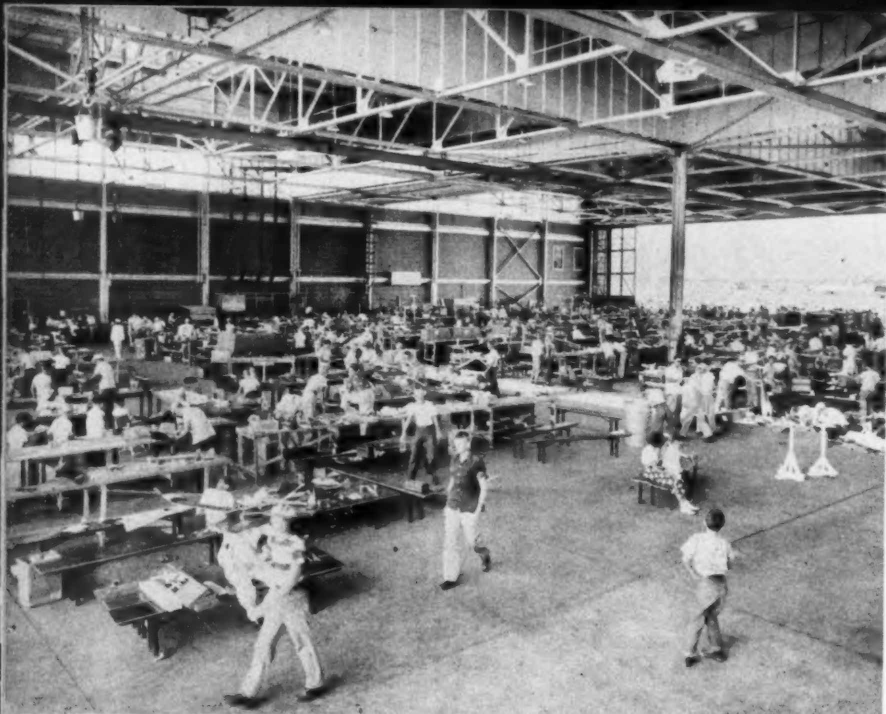

WASH-IN
WASH-IN
AIRFOIL - ORIGINAL
TAIL - THIN AIRFOIL
1° L
0
0
C.G. 85% CHORD
(INDOOR)
H-L GLIDER
BOB DAGAND


U-C SPEED
KEITH STOREY
AIRFOIL-N.A.C.A. 2209
TAIL - SYMMETRICAL
2° L
BELLCRANK
30% CHORD
0
0
0
C.G. 20% CHORD


ADD 2 OZ. WEIGHT
TO OUTER TIP
AIRFOIL - MODIFIED CLARK Y
TAIL - SYMMETRICAL
7
MINIMUM
5° R
0
BELLCRANK
35% CHORD
1/4 AT LEAD
GUIDE
0
0
C.G. 10% CHORD
0
U-C TEAM RACER
F.A.S.T. CLUB


AIRFOIL-N.A.C.A. 0018
TAIL-SYMMETRICAL
WASH-OUT
ADD WEIGHT TO OUTER TIP
25% CHORD
5° R
0
1/4 AT LEAD
GUIDE
0
0
0
C.G. 25% CHORD
U-C STUNT
J.C. YATES


AIRFOIL- CLARK Y
TAIL-SYMMETRICAL
BELLCRANK
35% CHORD
1/2 GAP
0
10° R
1/4 AT LEAD
GUIDE
0
0
0
C.G. 25 % CHORD
0
U-C FLYING SCALE
DICK EALY



Hangar repair shop at a relatively quiet moment. Navy obligingly set up the work benches.

Jim Walker frowns impatiently at his winning rc.

20th Nationals 1951

DALLAS, TEXAS

From July 24 thru July 28

THESE ARE FIRST PLACE WINNERS. NATIONAL CHAMPION

SPEED

Class A: Jr.—Tommy Davis, 110.56 mph; Sr.—Robert Katzman, 116.27 mph; Open—Pat Massey and Carl Hall, 114.35 mph.

Class B: Jr.—Alfred Davis, 127.29 mph; Sr.—Herbert Davis, 125.78 mph; Open—Anthony Grish, 136.98 mph.

Class C: Jr.—Jimmy Price, 121.29 mph; Sr.—Jack Friedland, 137.51 mph; Open—Lee Hill, 136.88 mph.

Class D: Jr.—Harry Fiegel, 148.88 mph; Sr.—Herbert Davis, 148.76 mph; Open—Pat Massey and Carl Hall, 146.69 mph.

FREE FLIGHT

Class A: Jr.—Richard Moore, 16:49.4; Sr.—Robert Gelvin, 22:21.6; Open—Sal Taibi, 27:44.1.

Class B: Jr.—Gene Jackman, 15:29; Sr.—James Carpenter, 18:50; Open—Ernie Shailor, 21:41.4.

Class C: Jr.—Curtiss Franken, 18:43; Sr.—Don Murray, 22:00; Open—Robert Ottoman, 28:05.4.

Half-A: Jr.—Don Tune, 13:29; Sr.—Jack McComb, 15:07.6; Open—Dick Everett, 22:05.

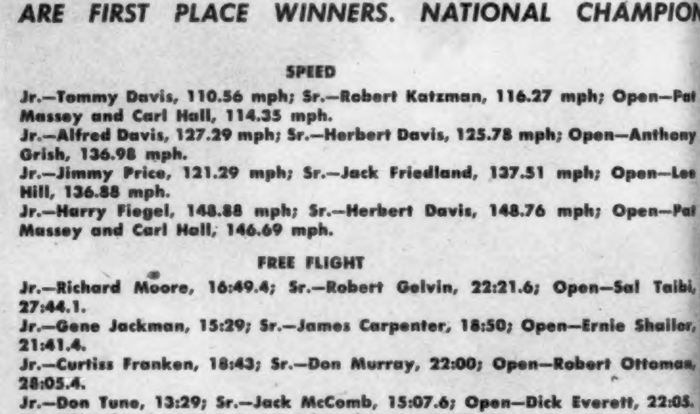
ROW: Jr.—Bill Loflands, 4:11.8; Sr.—R. Edward Mate, 11:27; Open—Dan Lutz, 18:44.4.

INDOOR

Stick: Jr.—Earl Hoggard, 10:51.4; Sr.—Paul Simon, 15:36.9; Open—George de la Mater, 21:47.5.

Cabin: Jr.—Steve Benovich, 3:51..6; Sr.—Otto Heithecker, 9:41; Open—George de la Mater, 19:43.3.

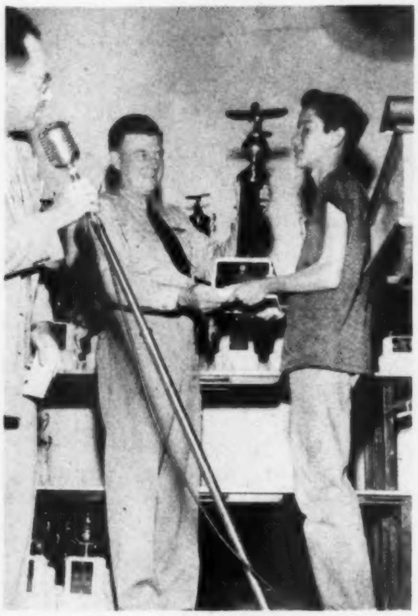
Hand launched glider: Jr.—Don Tune, :41.9; Sr.—Charles Bushing, :55.5.



The old water barrel was everybody's favorite.

Right—Towliners waiting their turn to fly.

ony Grish shows record speed job to MAN editor.



Johnny Clemens, Arthur Godfrey, G. Jackman.

Start 'em young! Bill Teague, and his son Larry.

IS PAUL SIMON, A SENIOR. OPEN CHAMP IS BOB BIENENSTEIN; JUNIOR IS GENE JACKMAN.

PAYLOAD

Half-A: Jr.—Gene Jackman, 9:06.8; Sr.—James Kehls, 9:03; Open—Frank Ehling, 15:31.4.
Class A-B: Sr.—Michael Cook, 3:36.6; Open—Herbert Kethe, 15:19.
Cargo: Randolph La Matt, 14½ ozs.

TOWLINE

Jr.—James Watson 12:03.2; Sr.—Robert Aidnk, 12:27.3; Open—Dick Everett, 13:42.

HAND LAUNCHED GLIDER, OUTDOORS

Jr.—Gene Jackman, 6:44.7; Sr.—Bob Brawner, 16:44.6; Open—Ray Matthews, 15:25.1.

STUNT

Jr.—Harris Grimes, 324 pts.; Sr.—Don Ferguson, 389½ pts.; Open—Lew Andrews, 382 pts.

WAKEFIELD

Jr.—Don Tune, 7:17.6; Sr.—Otto Heithecker, 6:40; Open—Joe Bilgri, 13:18.8.

UNLIMITED RUBBER

Jr.—Don Norwicki, 7:29.1; Sr.—Bob Brawner, 8:50.4; Open—Henry Cole, 15:00.9.

RADIO CONTROL

Jim Walker, 271 pts.

NAVY CARRIER

Bob Lutker, 225.45 pts.

NAVY BOMB DROPPING (RC)

Cifford Schaible, 99½ pts.

CONTROL FLYING SCALE

Jr.—Jimmie McCroskey, 22 pts.; Sr.—Juel Clevenger, 37.75 pts.; Open—John Abbott, 50 pts.

JET

Jr.—Tommy Davis, 132.35 mph; Sr.—Herbert Davis, 142.63 mph; Open—Thomas Baker, 140.73 mph.

FLYING SCALE RUBBER

Jr.—None; Sr.—James Caspar, 161 pts.; Open—Bob Bienenstein, 236 pts.

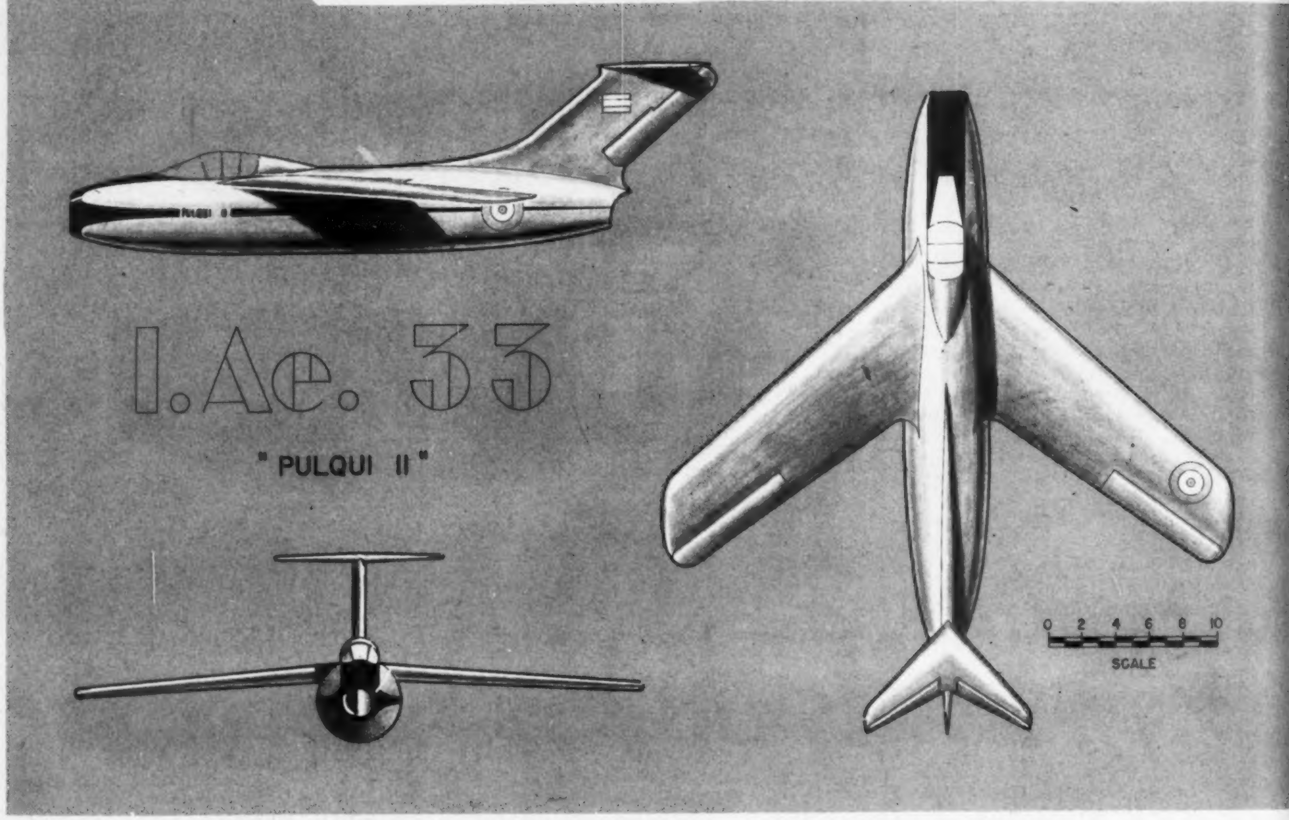
TEAM RACING

Bob Lutker.

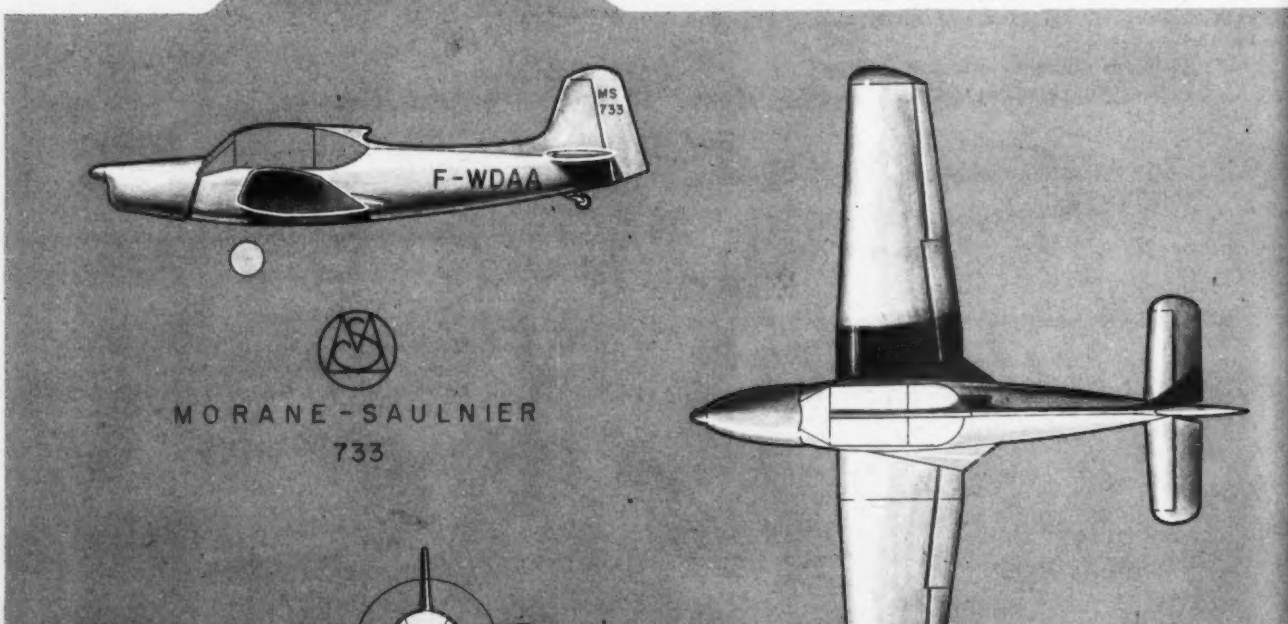
MISCELLANEOUS

Testor Award, O. K. Anderson; Sportsmanship, Carl Goldberg; Club Champion, Detroit Balsa Bugs; National Champion, Paul Simon (Sr.); Junior Champion, Gene Jackman; Open Champion, Bob Bienenstein.

No. 13—Pulqui II



No. 14—Morane-Saulnier 731



▶ September and school are synonymous, and thinking of school means thinking of education and learning. There are only a few ways to learn about airplanes—by theoretical studies (paper designs, they're called), windtunnel tests and flight tests of the actual craft. All of this is by way of saying that the beginning of school is a good time to talk about some of the research airplanes with which the services have been learing about flight at very high speeds.

First, the *Skyrocket*. This glistening white, rocket-propelled plane slammed through the thin blue air high above Edwards AFB, Calif. on June 11 to a speed and altitude never reached before by man and machine. The Navy and Douglas Aircraft Co. have claimed a new set of records for the craft's performance, estimated in some quarters as high as twice the speed of sound at 72,000 ft. That would mean a speed of 1,324 mph!

You'll remember that the *Skyrocket* (*D-558-II*) started out life as a combination rocket-plus-turbojet powerplant. Along about the end of 1949, the Navy decided that high-altitude speed runs would be of increased importance in its research program. So, plans were made to remove the turbojet engine engine and replace it with increased amount of rocket propellant.

This decision meant that the self-contained takeoff system of the *Skyrocket* had to be abandoned in favor of using a mother plane, in this case a modified *B-29*. Pictures of the mother craft show some extensive removal of fuselage structure, and the addition of a heavy external brace to take the loads across the cutout.

The powerplant on the record flights was Reaction Motors, Inc. *LR8-RM-6* rocket engine, basically the same engine that powered the Bell (*Continued on page* 54)

Argentine's *Pulqui II* is first-rate high-performance jet fighter. What makes it good is the presence of Kurt Tank, designer of Focke-Wulf *190*, who now plies his art in the western hemisphere.

Mystery plane. Britain's new Handley Page *88* flies an experimental wing. The wing may be a scaled down version of that on a four-jet Handley Page bomber jet to come. The fuselage is an *Attacker*.

Shortly after this launching shot of the Douglas *Skyrocket* dropping from its mother ship was taken, the needle-nosed rocket job—jet was removed—set speed and altitude records estimated as high as 1,324 mph at 72,000 feet. Below—Take-off on the desert for an earlier speed run.

planes in the news

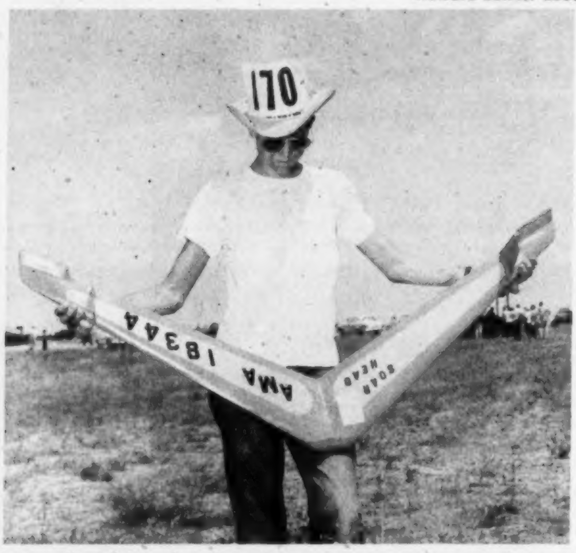
by DAVID ANDERTON

Spectacular planes and flights abound as the wraps are taken off many mystery aircraft. Here's the story behind the story!

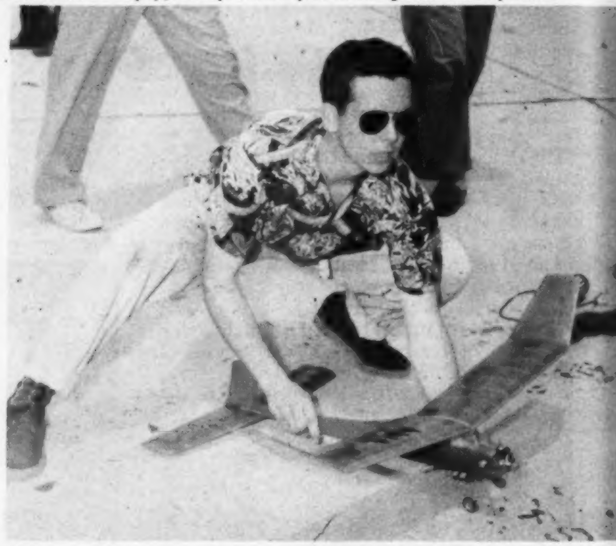
air ways

as seen at the Nationals

Howard Bonner about to release MacNabb equipped rc job. Two-speed K & B glow .19 really howls.



An excellent flying wing, Harry Robertson, gets a dose of wash-out.

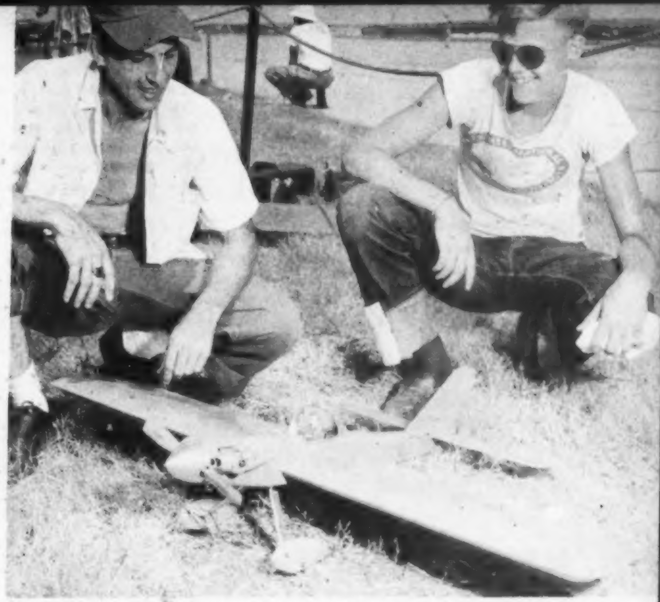


Lew Mahieu rog's his new free flight design. Features novel raked wingtip panels.

Bill Krecek letting go of his rubber scale entry, a Focke-Wulf Stosser.

Sal Taibi with Class B free flight. Sal put in better than 27 minutes in Class A.

Ray Matthews, of Pay-load rep, prepares *Fubar*, one of his designs.



Open, Senior stunt winners, Andrews, Ferguson, flew *Barnstormers*.

High-thrust line AA, flown by John H. Schneider. Hot performer, too.

Jim Carpenter — guess what club — turns loose his Class C entry in ROW event.

Frank Ehling looks determined with big Wakefield.

Hank Cole took a first with this long Wakefield.

Six K & B .049's, Sgt. Thompson's on B-36. Watta Job!

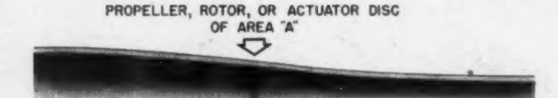
Camera catches a few of the several thousands of outstanding airplanes flown in the numerous events of July 24-28 at the Dallas Naval Air Station. Complete story and pictures next month.

Phantom drawing reveals details of the engine and fan installation in a Lockheed fighter. Air ducts and exhaust tunnel and orifice must be properly arranged for efficiency. Note how the vanes behind the engine straighten out the turbulent flow of air from the fan. The long, pointed balsa fairing behind the motor also is essential. Larger engines should perform better.

here come the JETS!

by THOMAS H. PURCELL, JR.

PROPELLER, ROTOR, OR ACTUATOR DISC OF AREA "A"



V=AIRPLANE VELOCITY
v=INCREASE IN VELOCITY AT DISC
v_1=TOTAL INCREASE IN VELOCITY DUE TO SYSTEM

Top—The author launches a ducted fan model. Above—Figure 1, the basis of the deductions. Scale jet type models may also be flown by Jetex.

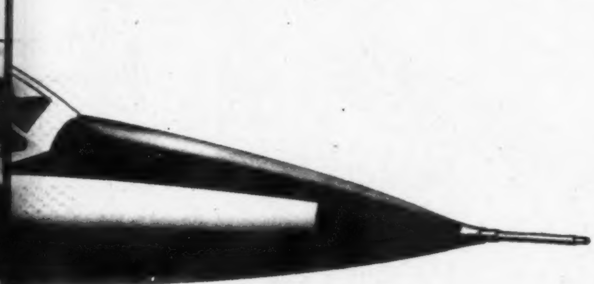
▶ The thrill of flying a scale *F-90, F-7U-1,* or a similar jet airplane can be realized at last. If you want to enjoy the sight of swept wings and propellerless noses climbing skyward this is where you can learn the trick. These models are realistic and simple to build. All you need is a good running glow ignition engine. The models that have been built to date use AA engines but larger engines can be used in larger airplanes.

The system is basically a ducted fan driven by a reciprocating engine. Certain modifications of the jet intake and exit sizes are necessary but these changes do not destroy the scale appearance of the model. Some elementary theory follows so that the designs and methods may be understood clearly.

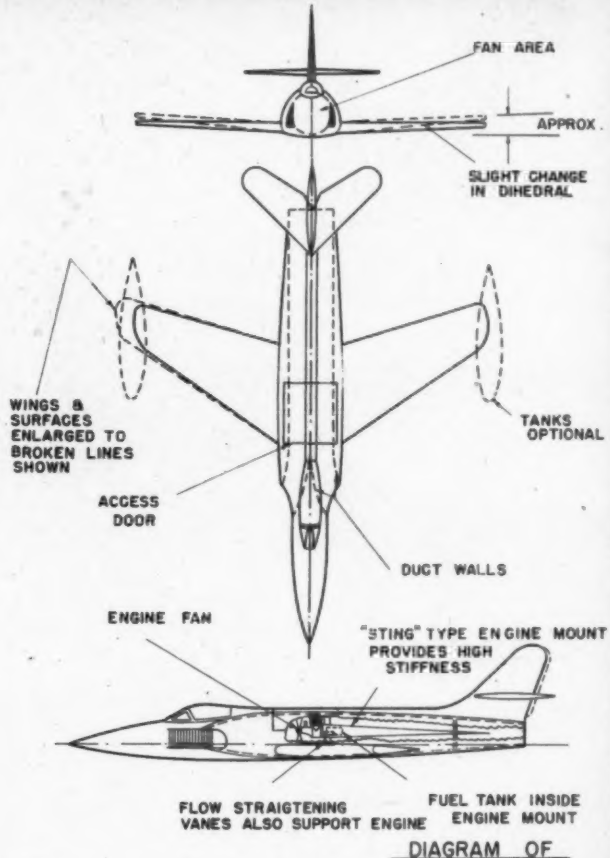
It has long been known that shrouding a propeller increases its thrust at low airspeeds. The shrouding reduces tip losses and thus increases thrust results. Extending the shrouding for a length of several times the propeller diameter turns the system into a ducted fan. The propulsion device used to power these jet models evolved from the theoretical considerations as given by Glauert in *Aerofoil and Airscrew Theory,* Chapter XV. Glauert introduces the classical equations for propeller thrust from momentum theory. The thrust is assumed to arise from an *increase* of axial velocity imparted to the *mass* of air flowing through the propulsion system. The system diagram is shown on page 18. Glauert first proves that half the increase in velocity due to the actuator disc (or propeller) occurs in front of the disc and half behind the disc. Thus referring to the diagram $v = \frac{v_1}{2}$. The thrust equation, based on momentum theory is $T = pA\ (V + v)\ v_1$. Here p is air density and $pA\ (V + v)$ is the mass of air passing through the disc in unit time. Therefore thrust is *mass flow* times *total increase in axial velocity.*

Now Glauert also proves that the ideal propulsive

Why ruin the looks of that hot jet job by sticking an old fashioned prop on the back? The ducted fan makes it possible to fly those Migs, Sabres, even the Cutlass, by means of an AA engine.



Half-size patterns of two successful fans used by author. Specifications must be carefully followed for successful flying of jet planes.



Three-view drawing of a proved Lockheed. Note engine, fan location. Below—Close-up of an .049 *Wasp* installation in a *Cutlass*. Note side intake screens. Bottle cap is handy starter. K & B and fan, also shown.

efficiency of the system is: $n = \dfrac{V}{V + v}$

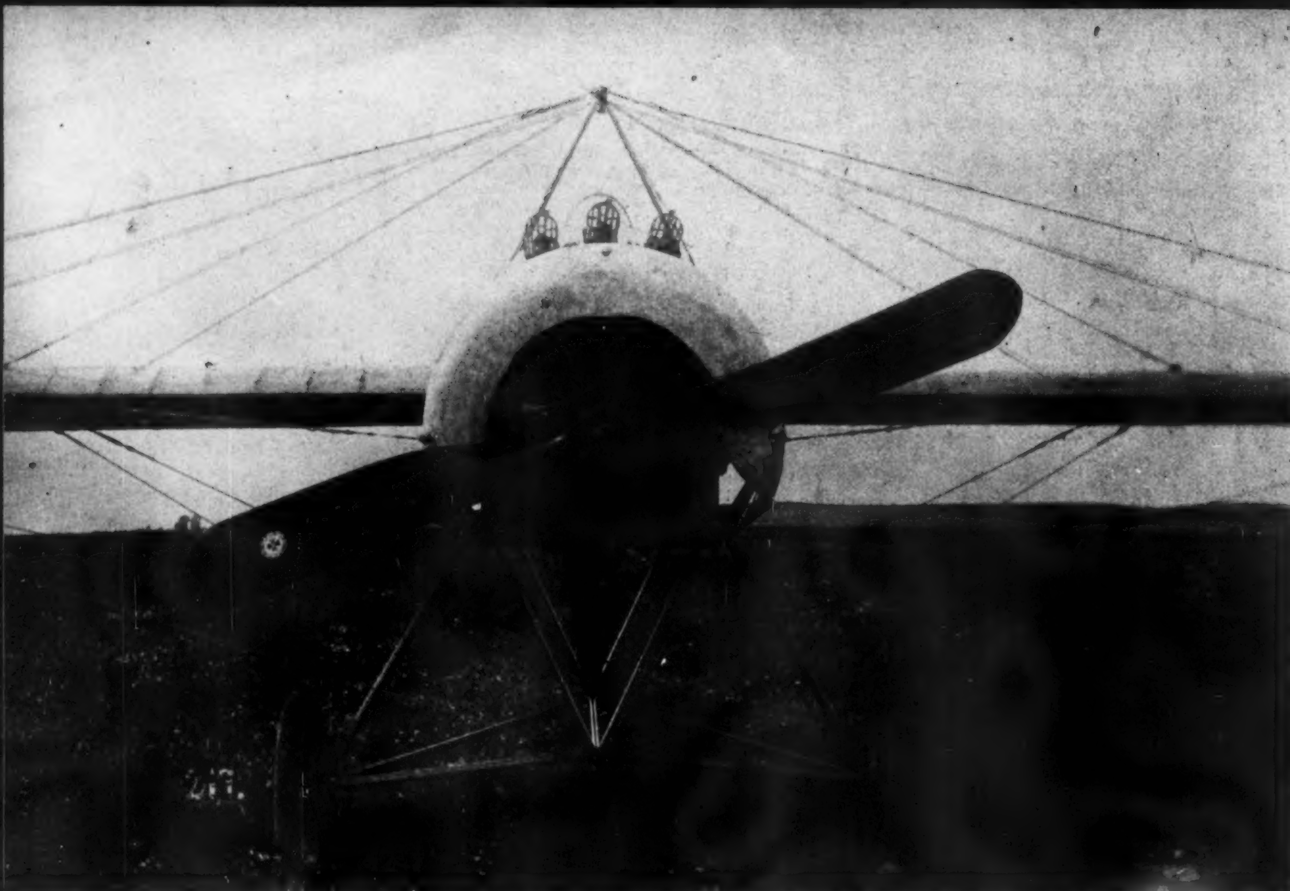
This efficiency can be applied to a jet propulsive system by suitably modifying the equation.

Since $V = \dfrac{v_1}{2}$, $v = \dfrac{Ve - V}{2}$, where Ve is the exit velocity of the system

Then: $n = \dfrac{V}{V + \dfrac{(Ve - V)}{2}}; = \dfrac{2V}{V + Ve}; = \dfrac{2}{1 + \dfrac{Ve}{V}}.$

Thus the system efficiency is inversely proportional to "exit velocity/airplane velocity." This immediately indicates that the exit area should be fairly large for efficient propulsion. However, it cannot be larger than the inlet area or the thrust will be negative. It was found that the exit area could be almost as large as the fan area if model scale appearance was not destroyed. The inlet area should be about twice the exit area. All of the above considerations are based on the ideal theory involved and even the efficiency factor is an ideal one. This means that if the above discussed efficiency should come out 80%, then the actual efficiency would be somewhat less than 80% due to friction effects which have been ignored thus far. These friction losses occur in transferring engine energy through the fan to the air. This loss will be accounted for by applying a second efficiency to the system. Thus, terming the theoretical efficiency n_i, and the friction loss efficiency n_f, Thrust Horsepower $= n_i \times n_f \times$ Engine Horsepower.

Now full scale propellers have a total efficiency of about 85% but it was believed that the small propellers on AA engines suffered high friction losses. On this basis it was believed that a ducted fan, which would not suffer these high friction losses, could (*Continued on page* 40)



On the strength of the initial advantage of the Fokker *E-1* and its synchronized guns the Germans built this special three-gun job for Max Immelmann.

Fokker E-1

First synchronized-gun fighter in history, the *E-1* had the Allies guessing for nearly five alarming months.

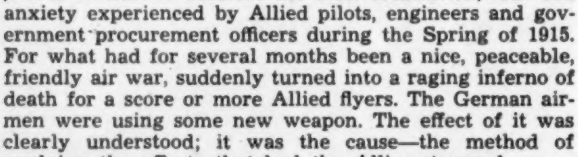
by ROBERT C. HARE

It is difficult to describe the utter frustration, fear and anxiety experienced by Allied pilots, engineers and government procurement officers during the Spring of 1915. For what had for several months been a nice, peaceable, friendly air war, suddenly turned into a raging inferno of death for a score or more Allied flyers. The German airmen were using some new weapon. The effect of it was clearly understood; it was the cause—the method of applying the effect—that had the Allies stumped.

The cause was the first practical synchronized machine gun and the effect was a nearly complete demoralization of the French Air Service and the Royal Flying Corps.

The first synchronized gun monoplane was called the Fokker *E-1*. Although the die-hard German authorities accepted the device as practical, they demanded proof of

WORLD WAR I



Powered by an 80 hp Oberursel, *E-1* had wing warping lateral control.

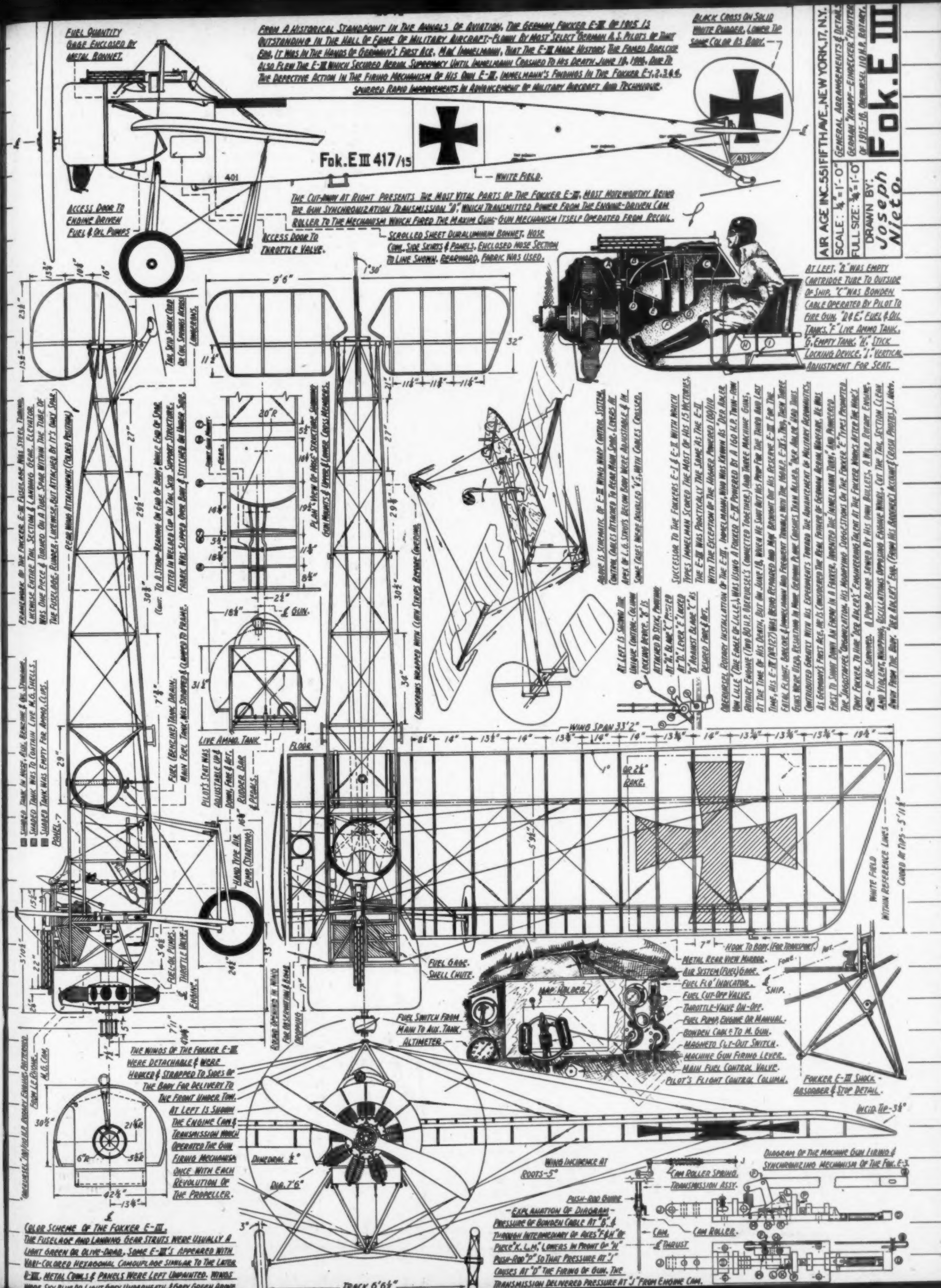
its ability to knock an Allied plane out of the sky before they would authorize production. Behind the synchronized gun was quite a story.

Probably no other single device had as great an effect on the development of the airplane during World War I. That the Germans were able to come out with it first and thus gain a temporary advantage in the air early in 1915 was pure happenstance. The best armament brains in Europe had been working on the problem of firing a gun through the propeller arc for years. August Euler had patented such a system in 1910 but it was never developed to the point of becoming practical. In Roumania, Georges Constantinesco just about had the problem licked, and in England, Sopwith and Kauper were on the verge of success. Even in America, Browning was close to the answer with an electrical synchronizing system.

Ironically, the problem of synchronization, which the best armament men of the belligerent nations were trying to master, was solved by Anthony Fokker, a national of neutral Holland!

It all began with a young sportsman named Roland Garros. This tempestuous fellow was a daredevil in every sense of the word. At the outbreak of war he offered his services—and his little Morane monoplane—to the French government. They accepted him, gave him a newer type Morane and turned him loose over the lines. He soon discovered he couldn't "out-spot" the enemy observation pilots who were his counterparts, came to the conclusion that the idea was to prevent the enemy from finding out where and what was going on behind French lines. So he went up in his little Morane one day with a Lebel automatic rifle, and exchanged some shots with an equally enterprising German pilot.

Garros came to a (*Continued on page 38*)



From A Historical Standpoint In The Annals Of Aviation, The German Fokker E-III Of 1915 Is Outstanding In The Hall Of Fame Of Military Aircraft.—Flown By Most Select German A.S. Pilots Of That Era, It Was In The Hands Of Germany's First Ace, Max Immelmann, That The E-III Made History. The Famed Boelcke Also Flew The E-III Which Secured Aerial Supremacy Until Immelmann Crashed To His Death June 18, 1916, Due To The Defective Action In The Firing Mechanism Of His Own E-III. Immelmann's Findings In The Fokker E-1,2,3 & 4, Spurred Rapid Improvements In Advancement Of Military Aircraft And Technique.
Black Cross On Solid White Rudder, Lower Tip Same Color As Body.
AIR AGE INC. 551 FIFTH AVE., NEW YORK, 17, N.Y.
General Arrangements & Details
German "Kampf-Eindecker" Fighter
Of 1915-16. Oberursel 110 H.P. Rotary.
Fok. E III
SCALE: 1/4"=1'-0"
FULL SIZE: 1/4"=1'-0"
DRAWN BY: Joseph Nieto.
Fuel Quantity Gage Enclosed By Metal Bonnet.
Fok. E III 417/15
White Field.
Access Door To Engine Driven Fuel & Oil Pumps
Access Door To Throttle Valve.
The Cut-Away At Right Presents The Most Vital Parts Of The Fokker E-III, Most Noteworthy Being The Gun Synchronization Transmission "A", Which Transmitted Power From The Engine-Driven Cam Roller To The Mechanism Which Fired The Maxim Gun- Gun Mechanism Itself Operated From Recoil.
Scrolled Sheet Duraluminum Bonnet, Nose Cowl, Side Skirts & Panels, Enclosed Nose Section To Line Shown. Rearward, Fabric Was Used.
9'6"
32"
1°30'
At Left, "B" Was Empty Cartridge Tube To Outside Of Ship. "C" Was Bowden Cable Operated By Pilot To Fire Gun. "D & E", Fuel & Oil Tanks. "F" Live Ammo Tank. "G" Empty Tank. "H" Stick Locking Device. "I" Vertical Adjustment For Seat.
Wing Span 33'2"
Live Ammo. Tank.
Floor
Fuel Gage.
Shell Chute.
Fuel Switch From Main To Aux. Tank.
Altimeter.
Map Holder.
Hook To Body (For Transport)
Metal Rear View Mirror.
Air System (Fuel) Gage.
Fuel Flo' Indicator.
Fuel Cut-Off Valve.
Throttle-Valve On-Off.
Fuel Pump, Engine Or Manual.
Bowden Cable To M. Gun.
Magneto Cut-Out Switch.
Machine Gun Firing Lever.
Main Fuel Control Valve.
Pilot's Flight Control Column.
Fokker E-III Shock Absorber & Stop Detail.
Incid. Tip-3½°
The Wings Of The Fokker E-III Were Detachable & Were Hooked & Strapped To Sides Of The Body For Delivery To The Front Under Tow.
At Left Is Shown The Engine Cam & Transmission Which Operated The Gun Firing Mechanism Once With Each Revolution Of The Propeller.
Dihedral ½°
Dia. 7'6"
Wing Incidence At Roots-5°
Cam Roller Spring. Transmission Assy.
Diagram Of The Machine Gun Firing & Synchronizing Mechanism Of The Fok. E-3.
Push-Rod Guide
-Explanation Of Diagram-
Pressure Of Bowden Cable At "B", & Through Intermediary Of Axes "F,G,H" Or Piece "K, L, M," Lowers In Front Of "N" Push-Rod "P" So That Pressure At "J" Causes At "D" The Firing Of Gun. The Transmission Delivered Pressure At "J" From Engine Cam.
Cam.
Cam Roller.
℄ Thrust
3°
Track 6'6½"
30½"
21⅛"R
6"R
5½"R
42½"
13¼"
Color Scheme Of The Fokker E-III.
The Fuselage And Landing Gear Struts Were Usually A Light Green Or Olive-Drab. Some E-III's Appeared With Vari-Colored Hexagonal Camouflage Similar To The Later D-VII. Metal Cowls & Panels Were Left Unpainted. Wings Were Sky Blue Or Light Grey Underneath, & Grey Green Above.

This is the Testor 29 Senior built by the author.

we test the senior

With the *Seniors,* Testor Chemical Company winds up its series of progressive steps in building and flying of U-control planes. Four steps and three different size planes in each step make up the series to conform with different engine sizes from .099 to .29 displacement. The discussion here is only on the *Senior 29* although the comments and information are applicable to the *Senior 9's* and *19's.*

The *Senior 29,* a stunt model designed for the .29 engines, can also be used as well with a .32 or .35 displacement. It is comparatively light and would do well with a .23 or .24 and some of the .19's.

The wing span is 40", average chord 8" and the wing tapers in thickness from 1-3/8" at the center to 1-1/4" at the ends; length is 28" with spinner. Complete with engine and painted, the *Senior* weighed in at just under 1-3/4 lbs. without landing gear and just over 1-3/4 lbs. with the gear.

The kit features the Testor's "Key-lock" construction and molded balsa fuselage sides. These features have very good possibilities for future development in their gas model line. The kit includes hardware, wooden wheels, plastic canopy, pre-shaped and die-stamped parts. Full size, two-view plans with a fair amount of detail, a large sheet of step by step instruction, and detailed sketches are included. These will be discussed later. The control mechanism is the Jim Walker type.

For test purposes the model was flown with a McCoy *.29 Redhead,* K & B *Torp .29* and Fox *.35,* using both Testor's *39* fuel and K & B *Supersonic 100.* Ten-six props, both Testor's and Top Flite, proved the best size. All combinations proved satisfactory on both 60 and 70 foot lines.

What tank is used depends on the engine selected. The McCoy *Sportsman,* for instance, is a front rotary type, whereas the *Redhead* is a rear Venturi type. The former leaves unrestricted space for a tank, but for the latter engine, we made up a square tank of the stunt type with the two vents facing forward to gain the greatest possible engine run.

When the *Senior 29* was first selected for the "We Test" series, and the kit was checked, it was felt that it

Above—Wheels up! This action shot was taken during the inverted flight portion of the pattern.

Right—Jim "No Nerves" Fluharty fires up the *Senior* prior to putting it through the pattern. Flown by various pilots, the test model came through unscathed. It has a moderate-area.

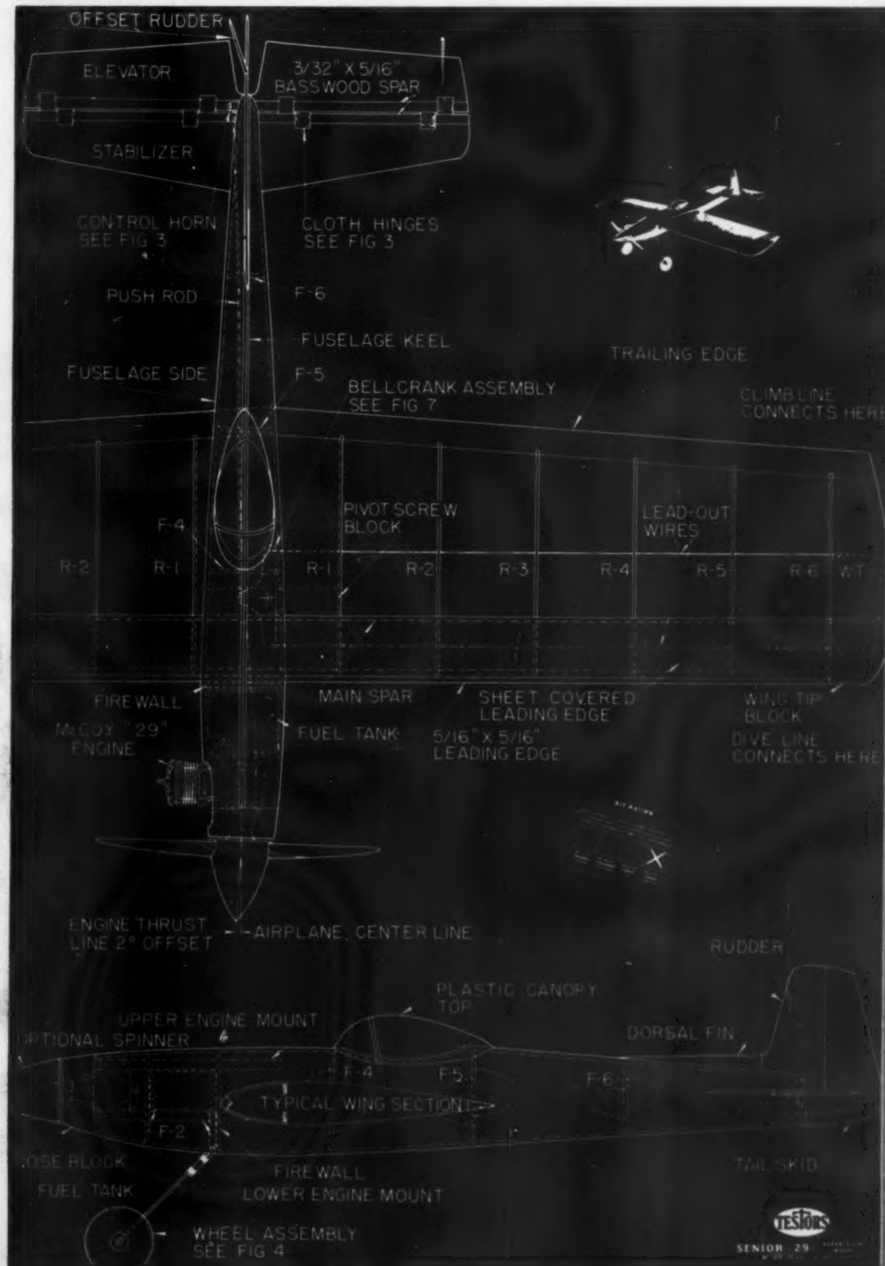
offered something different and new in construction. However, the wing and tail area, less when compared with most of the existing precision stunt ships, seemed to make it a questionable top class ship, although it obviously would be a good flyer. We were wrong! The performance, as we built it, was well above expectations. It won't go around on a dime and leave nine cents change, but that is a point of debate. The trend in stunt is for precision-smooth loops, eights, and stable flight. Check the rules, use the space specified and you'll have one of the smoothest flying ships you've ever seen.

It is advisable to stack the ribs, left and right, side separately before inserting in place. Line up the main spar slots and check for equal graduation of the ribs out toward the tip—also for evenness of the leading edge notches and leading edges that will receive the planking. Trim and sand if necessary. This is important for a smooth job. Next, check the fit of the ribs in the main spar keylock slots, making sure the ribs are vertical. It may be *(Continued on page 44)*

by DON GROUT

Featuring molded balsa shell fuselage sides, the Testor *Senior .29* was tested with McCoy, *Torp,* and Fox engines. The test model performed the full pattern, held out on overhead eights, is a precise, smooth, not jerky, flier.

Three-view drawing reveals realistic planforms and streamlining of the *Senior*. One interesting feature is the side mounted engine. In crack-up, rightside up or inverted, cylinder does not hit.



Built in all sizes from AA jobs to big "60's," the *Ringmaster* has proved its ability. Wing construction features an I-beam, sheeted edges; fuselage has sheet sides, extra long motor mounts.

RINGMASTER

FOUR YEARS OF DEVELOPMENT WENT INTO THIS HIGH PERFORMANCE STUNT JOB, FOR ENGINES OF .19—.35 DISPLACEMENT.

by HARRY WILLIAMSON

The *Ringmaster* is a tried and proven stunt ship that originally took to the air in the summer of 1947. In the four years that have passed since that day, we have built many of these ships and with some changes, structurally and aerodynamically, have produced the version you see here.

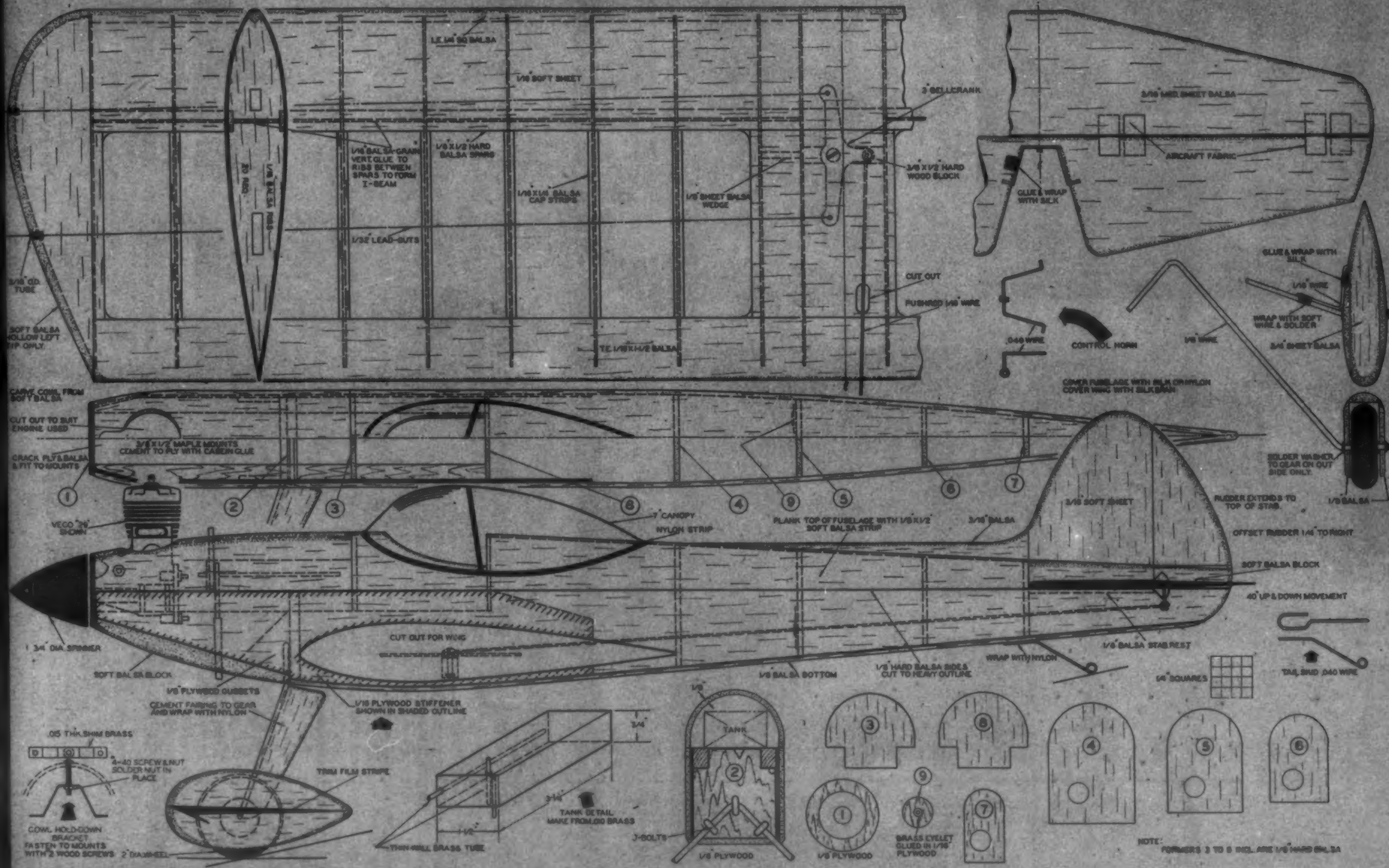
This design has been scaled up for the big "Sixties" and down to the tiny "A" jobs. Regardless of the size, it has proven its ability. Speed, strength, appearance and full-pattern ability are its features. Although designed for the K & B *29*, the version shown on the drawings has also been flown with the McCoy *36* and will turn in a very creditable performance when flown with O & R *23's*.

Construction is conventional and quite simple, even for the less experienced. The wing is of the single I-beam spar type, with sheet covered leading and trailing edges. Fuselage construction is a glorified box with flat sides and bottom and a rounded, planked top. Engine mounts that extend two-thirds of the wing chord, offer that much-needed strength in a crackup.

Fuselage Sides: Select two pieces of 1/8" hard sheet balsa and cut out the fuselage sides. Two nose reinforcement pieces are made of 1/16" plywood and cemented to each side. Hardwood mounts, 3/8" x 1/2", are cemented in place and additionally strengthened with #2 flat-head wood screws, through the mounts and into the plywood. Cut out each side for the wing and lay both halves aside.

Wing: This part of the airframe, since it takes all the flight loads in those violent manuevers, requires a great deal of care to obtain maximum strength and efficiency. Cut out 20 ribs from 1/16" hard sheet balsa and sand to shape. Two pieces of 1/8" x 1/2" hard balsa strip form the upper and lower halves of the I-beam spar. Pin one piece of 1/8" x 1/2" to your workbench and cement the ribs in place. Before allowing the cement to harden, cement the lower half of the trailing edge to the ribs and correctly align the assembly. After sufficient drying time has elapsed, the top half of the spar and the leading (*Continued on page* 46)

Wheel pants, bubble canopy, dorsal fin and Oswald the pilot, add a note of pleasing realism, yet stuntability rates with that of flip-flopping "barn doors."

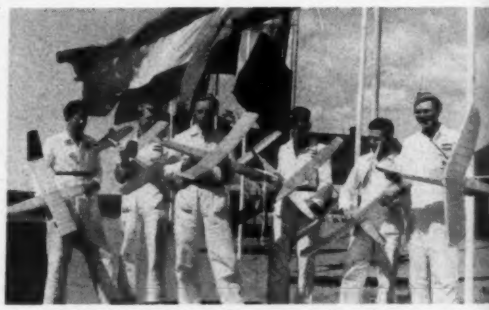


FULL-SIZE PLANS FOR BOTH "RINGMASTER" AND "GEE BEE" AVAILABLE. See Page 50.

Hail to the victor! Flying this simple geared job, S. Stark's flights were remarkable for their consistency, times going up as weather deteriorated. Stark is no newcomer.

FIRST ROUND		SECOND ROUND	
1. de Jong	258.1	1. des Chapper	243.
2. Tubbs	252.7	2. Tubbs	236.
3. Gilg	236.0	3. Cassola	236.
4. Stark	226.2	3. de Kat	236.0
5. Andrade	226.0	4. Stark	232.
5. Lustrati	226.0	5. Lustrati	229.
6. Woodhouse	224.0	6. Leardi	228.
7. Ferber	223.5	7. Hofmeister	223.
8. Holland	221.7	8. Borjeson	217.
9. Pointel	218.0	9. Dijkstra	215.
10. Dowsett	215.9	10. Pelegi	211.

The round-by-round results show clearly that consistency a major factor. Stark, who won, was fourth on both



The Dutch team. Dutch are European rubber champions and always do well in the Wakefield. Their J. de Jong took fourth.

How Sweden Won the Wakefield

by RON WARRING

On the basis of D-day minus one test flights, American jobs were rated favorites, but weather and skillful flying by four top winners dropped Austin Hofmeister to fifth place. Analysis of the winners.

▶ Return gears? A long fuselage with taut motor between hooks? Or just a conventional model? These are the three alternative layouts which Wakefield enthusiasts have to ponder for the 1952 event which will again be in Scandanavia, or the northeastern corner of Europe. A Swedish geared model won the 1951 contest with an excellent example of consistent flying but the models which really impressed and caused the greatest interest were undoubtedly those of the American team. On the basis of test flights the evening before the event, it seemed almost certain that either an American geared job or an American long fuselage design would come out on top.

What changed the situation on the day of the contest was the weather. That still 'dead' air just did not come. For the first two rounds the air was relatively calm low down, but with a fairish drift above about a hundred feet or so. On the first round, too, there was definitely lift around, if you got up high enough to find it. By the early morning, starting at 3 a.m., the wind had swung through 90 degrees and was now blowing a stiffish breeze. As a consequence, the American models trimmed for dead still conditions were just that bit out of trim for Finland! The Finns themselves were unable to explain it. For the past two or three weeks the weather had been abnormal with winds in the evenings instead of dead calm, and temperatures lower than average. Ellila himself was caught out on this score for he brought a new model along to Jamijarvi a week before the contest and just had no chance at all to put it into the air until the day before the event. He was using the new model, still obviously untrimmed, and promptly recorded a 'no flight' (under five seconds) on his first contest attempt. Flying his reserve, he could only manage a very modest official time of 130 secs. His second flight, with his new machine repaired, again resulted in a stall into the ground—the timekeepers promptly clocking off at 6.9 secs—after which the model bounced off into the air once more and flew for some further two minutes. He did not bother to take his third flight.

S. Stark of Sweden, the winner, put up some remarkably consistent times, perhaps even more significant because as weather conditions deteriorated, his flight durations went up. His last flight of just over four minutes placed him thirty seconds above H. Tubbs (G.B.) whose flight times went down each round. S. Lustrati of Italy placed third; J. de Jong of Holland fourth, with A. Hofmeister (U. S. A.) close behind with some more consistent flying for fifth place. These five were really the outstanding performers although probably the most impressive flying was by the two American long fuselage jobs favoured by the Californian boys Foster and Andrade.

IRD ROUND		RESULTS	
Vries	256.5	1. Stark (Sweden)	705.2
ark	246.5	2. Tubbs (G.B.)	676.2
strati	209.1	3. Lustrati (Italy)	664.2
ndrade	208.3	4. de Jong (Holland)	653.9
ofmeister	204.8	5. Hofmeister (U.S.A.)	629.4
Jong	189.8	6. de Vries (Holland)	621.6
olland	187.4	7. Andrade (U.S.A.)	614.8
ubbs	186.6	8. des Chapper (Belg.)	609.6
owsett	166.7	9. Holland (G.B.)	598.6
es Chapper	164.0	10. Cassola (Italy)	598.2

d second rounds, second on third round. Next year's U. S. nes may combine best features of long fuselage and gears.

Britain's Frank Holland with a typical faired slabsider. H. Tubbs took second for England. Only three fliers, including Hofmeister, did better than 200 seconds each round.

Joe Foster turns loose California long fuselage job at finals in Finland. Unfortunately, Finnish conditions did a switch. The wind blew!

George Perryman with geared model. Consensus of opinion was that consistency rates first; long fuselage—but geared!—is best '52 bet.

Stark's winning machine was a conventional 'Swedish' design which, to describe simply, is an orthodox slabsided fuselage with a rather deep, narrow section. Moderately high aspect ratio wings are used with parallel chord planform and the tips only cranked to dihedral. The tail unit is of simple rectangular outline. The design in fact does not impress as anything out of the ordinary but the model, like all Swedish models, is characterized by excellent construction. In flight, Stark's model was very stable with a moderate rate of climb but a sustained motor run giving considerable height. The propeller is approximately 18 in. diameter with a fine pitch—a feature which Stark intends to alter for next year's contest—powered by 14 strands Dunlop 1/4 strip. The propeller freewheeled at the end of the power run.

Tubbs of Great Britiain, who placed second, flew a fairly orthodox pylon slabsider with a streamlined nose. Fuselage length was 43 in., motor 16 strands of Pirelli 1/4 strip driving an 18 in. dia. fairly high pitch propeller. Although the motor run was short—around 60 seconds—the rate of climb was high, and hence altitude gained considerable.

Freewheelers therefore placed first and second, one a geared model and the other a single skin straight-drive motor. On balance there was really very little to choose between the performance of these two. In fact, it was generally thought that Tubbs would be the eventual winner after round two, but his last flight was a relatively poor one due to a slight upset to glide trim.

As a basis for consistent flight performance, take the flights made over 200 secs. duration. Only three people achieved three flights over this mark—the winner, Lustrati (Italy) and Hofmeister (U. S. A.). Two of these were geared models incidentally. That conditions deteriorated can be shown by the fact that round one saw 17 two hundred sec. plus flights; round two 12; and round three only five. Consistency, it seems, is still the main factor—and probably even more significant now that Finland has shown that even her weather is not infallible. The 1952 contest will be flown in Sweden, which is more or less an adjacent country, and it seems that every effort will be made to carry on the method of 'night flying' if a suitable venue can be arranged.

In any overall survey of the models at the 1951 Wakefield it is still the American jobs which come first in the picture. Stark was undoubtedly a worthy winner. His was a beautifully built model, beautifully trimmed, but with nothing particularly outstanding about it to invoke further comment—except that he used gears. The American models on the other hand typified similar outstanding workmanship with *(Continued on page 47)*

EL

TESTORS .... THE DOPE

AT IS SPECIALLY FORMULATED

R MODEL AIRPLANES...

Prize winning Howard in an eastern Plymouth eliminations takes off in the old World's Fair parking lot. Helper releases for the builder Henry Nelson.

AMA

official news

Wakefield finals • New liability insurance plan • Summary of new national records • Inter-club competition • Complete contest calendar dated up to January

by RUSS NICHOLS and CARL WHEELEY

SWEDEN WINS WAKEFIELD CONTEST. S. Stark has won for Sweden the International Lord Wakefield Trophy, marking the first time it has been awarded to that country in the trophy's 16 competitions. The victory totals now stand: Great Britain—6, United States—5 (an additional U. S. victory was disqualified because of a mixup in dates), Finland —2, France—1, and Sweden—1.

Austin Hofmeister, Baltimore, Md., was tops for the United States this year. He placed fifth and Manuel Andrade, Oakland, Calif., seventh. The latest reports at the time of publication indicate that Great Britain placed second and Italy third. What we're all waiting to hear is what the weather was like and what the winning times were. (See Sweden Wins the Wakefield, elsewhere in this issue.) Our guess is that the weather was really rough and our Team members' models were built to suit *typical* Finnish conditions too much. Anyway, hats off to our Team for a good try!

One thing we must say is that our Wakefield Team was really sent off in style. On hand at the luncheon presented by Bill Effinger at the Wings Club in New York were Casey Jones of the Academy of Aeronautics, Bill Winter, Don McGovern, Al Lewis, Carl Wheeley, William Fletcher, Bob Hatschek and, of course, the Team. Casey Jones' short talk was well put, remembering the thought of the late Lord Wakefield's original aim to encourage the design and development of miniature rubber-powered aircraft (the original rules specified any power-Editor) and, most important of all, to support a sporting activity which would bring together official representatives from the youth of all nations.

Let's not forget Jim Walker. Without his aid our Team could not have participated in person as it did.

LIABILITY INSURANCE. Just what AMA Chartered Clubs and Chapters have been waiting for in the way of liability insurance coverage for all the club's activities is the new club policy which the AMA helped in working out. The coverage seems so complete and the premiums so reasonable that every club will want to have this protection. Already available in most states, this protection is provided for all club activities on the insured premises or elsewhere and the ownership, maintenance or use of any premises (meaning building or land) in connection with the club program. The following questions asked of the insurance agent, and his answers, will give you a better insight to the advantage of the club's having third-party liability insurance:

1. What protection does Liability Insurance afford?

Answer: Liability Insurance protects against claims for bodily injury and property damage up to the policy limit arising from club or chapter activities. It therefore protects the financial assets of the club or chapter.

2. Can the individual members of an unincorporated club of chapter be used if an accident (*Continued on page* 52)

Morristown, Tenn., Flying Club: L. to R.—James Gratz, Dorsey Williams, J. T. Noe, David Noe, Bill Duncan, Bill McCune, Ralph Wright. Stunt's the thing.

"Spitfire" does it AGAIN!

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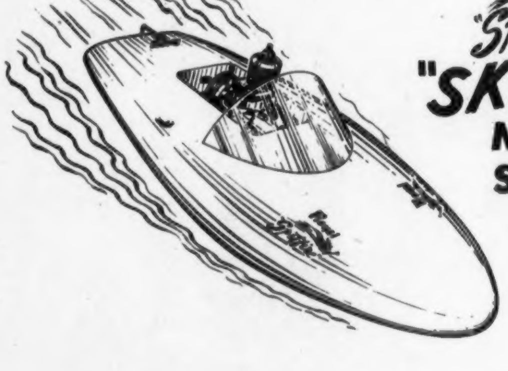

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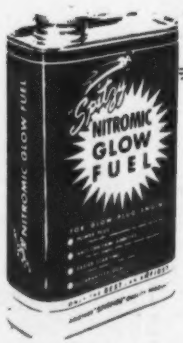

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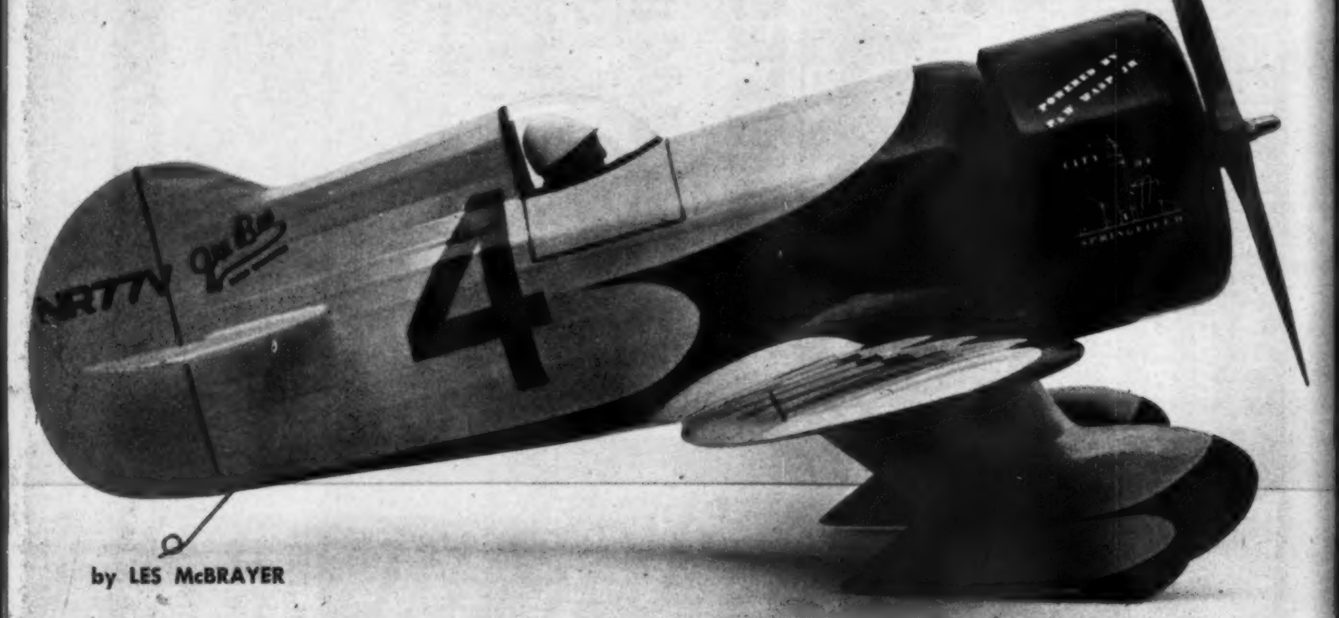
gee bee

The hottest racer of its day, the glamorous Gee Bee Super Sportster is here converted into a successful control-liner by one of the country's top hands. Brother, don't ask for more!



by LES McBRAYER

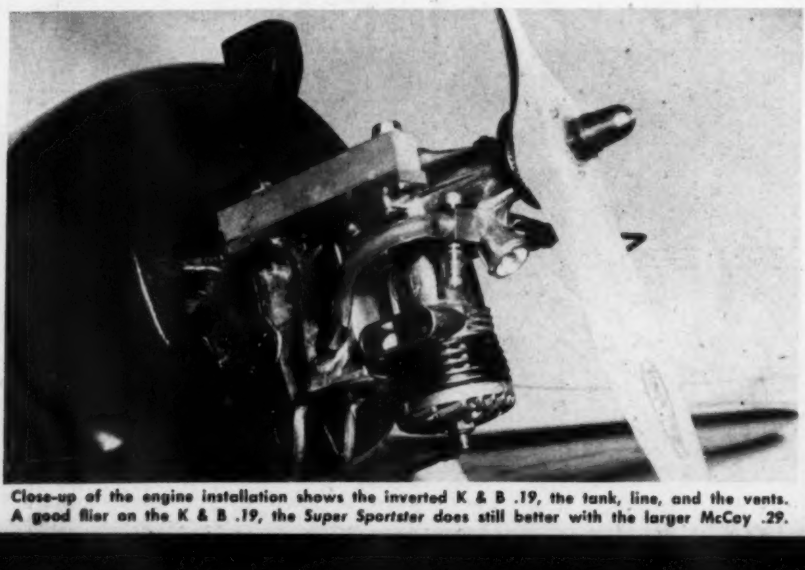
The amazing realism of the miniature racer will make scale fans wet their lips. It's more than a looker, too, because performance is on the ball.

One of the most famous of all racing airplanes, the *Gee Bee* with its short, stubby design makes an unusually attractive control-line model. Although a little harder to construct than some models, the builder will be rewarded with a smooth, easy flying model which can be used for Scale or Team Racing contests. The *Gee Bee* will attract great attention wherever it is flown.

Gee Bee NR-77V was built by the Granville Brothers in Springfield, Mass. It was powered with a Pratt & Whitney *Wasp Jr.* engine developing 525 horsepower. The unusual design immediately earned it such nicknames as the *Flying Silo* and *Flying Milk Bottle.* Lowell Bayles flew the *Gee Bee* in the 1931 National Air Races at Cleveland, Ohio. Flying in the Shell speed dashes he averaged 267 mph. This qualified the *Gee Bee* for the 100 mile Thompson Trophy Race. Flying a beautiful race, Bayles won the Thompson at an average speed of 236 mph, breaking the old record by about 35 mph.

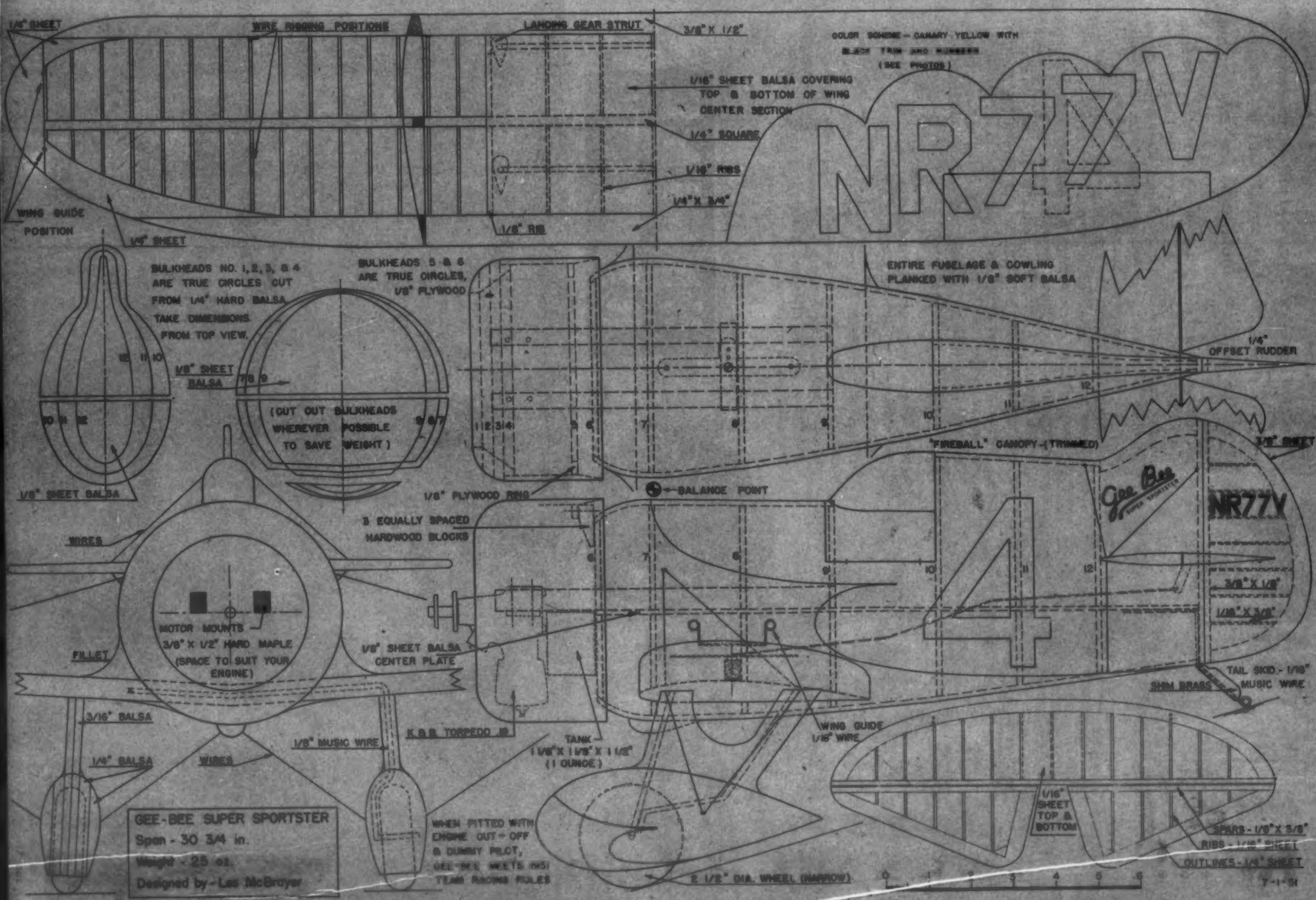
Late in November 1931 Bayles flew his stubby yellow and black racer, now equipped with a larger engine, in an attempt to set a new world's landplane record. He was unofficially clocked at 307 mph but timing difficulties prevented a new record.

On December 5, 1931 while making another record attempt at a speed of about 325 mph the *Gee Bee* suddenly disintegrated in mid-air and hit the ground in a ball of fire. Lowell Bayles had no possible chance to escape. So in the space of a few short months *(Continued on page 36)*



Close-up of the engine installation shows the inverted K & B .19, the tank, line, and the vents. A good flier on the K & B .19, the *Super Sportster* does still better with the larger McCoy .29.

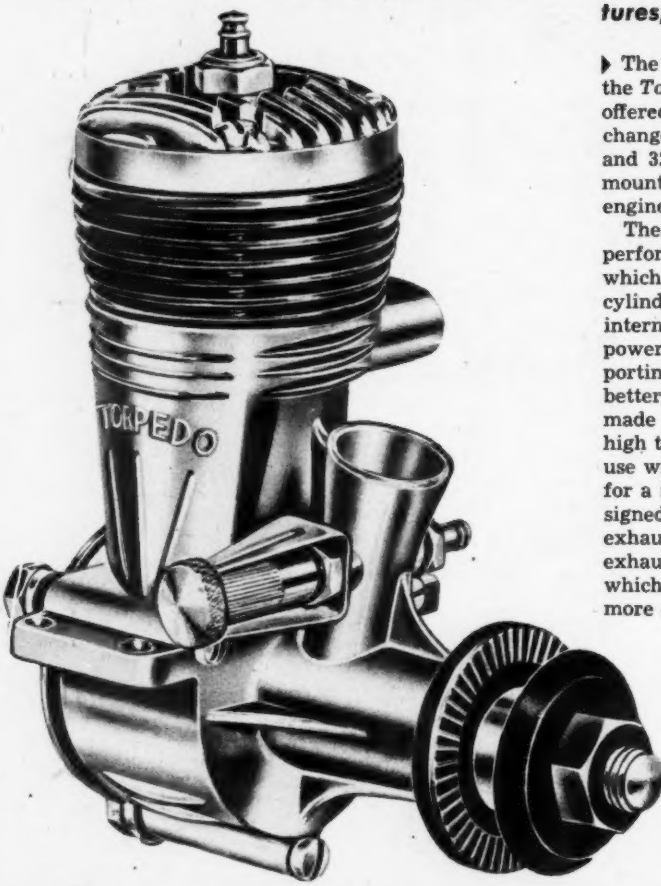
The author with original model. Les McBrayer is one of the original members of the F.A.S.T. club.



FULL-SIZE PLANS FOR BOTH "RINGMASTER" AND "GEE BEE" AVAILABLE. See Page 50.

K & B TORPEDO

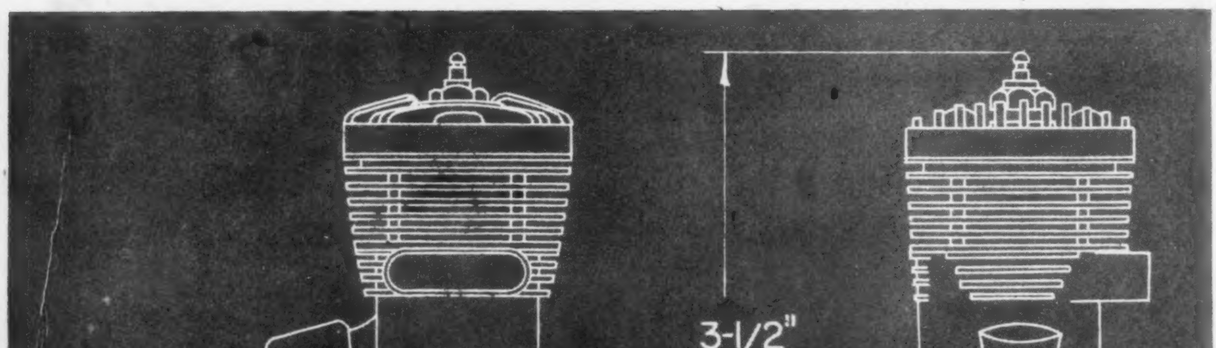
Increased intake porting, light piston, gives new .29 and .32 a big boost in power. Lots of new features, but parts interchangeable with old engines.



▶ The newly redesigned K & B *29* and *32* engines now make the *Torpedo* family one of the most complete lines of engines offered to the modelers today. Though there are numerous changes, the new engines will not obsolete the old style 29 and 32's as all parts still remain interchangeable. Also, all mounting lugs remain the same, therefore making the new engine interchangeable with the old.

These engines are designed and engineered to emphasize performance and dependability. The following are the changes which give the 29 and 32 the new look with new power. The cylinder head is not only thicker and more streamlined, but internally is redesigned for more even combustion. New power is gained from a 25% increase in the cylinder's intake porting along with a new light weight Meehanite piston for better engine balance and less vibration. The wrist pin is made of aircraft steel tubing. The crankshaft is now made of high tensil strength stress-proof steel to stand up under hard use with today's hot fuels. There is a new type needle valve for a finer, more positive setting to go with the larger redesigned venturi. With new eye appeal we find a new type exhaust with 35% more area for less back pressure and greater exhaust scavenging; also, a new crankcase with a big bypass which has greatly increased power by giving the engine a more efficient transfer of fuels.

ENGINE REVIEW



Flash!
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DALLAS, TEXAS
BARNSTORMER WINS AGAIN!
Lou Andrews 1950 NATIONAL STUNT CHAMPION
BARNSTORMER
Wing Span .... 47 in.
Wing area ..... 470 sq. in.
Length .... 30⅞ in.
Weight .... approx. 26 oz.
Speed .... 60 to 75 M.P.H.
Engine ...... .23 to .35 disp.
Here is the sensational performance record—SENIOR STUNT EVENT won by Buzz Ferguson with 390½ points. OPEN STUNT EVENT won by Lou Andrews with 418 points. Lou won the National Stunt Championship (for highest score) and with it the coveted Jim Walker Trophy.
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BABY BARNSTORMER
A JUNIOR VERSION OF THE 1950 NATIONAL STUNT CHAMPION TRIXTER BARNSTORMER
FINE TRIXTER MODELS
Wing Area ...... 118 sq. in.
Weight ..... approx. 4½ oz.
Engine ... .035 to .049 disp.
DESIGNED BY LOU ANDREWS
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Sensational
DIE-CUT BALSA
SHELF MODEL AIRPLANE KITS
18 EASY TO BUILD SCALE MODELS
ALL MILITARY - INCLUDING 10 JET JOBS
EASY ASSEMBLY - NO DIFFICULT CARVING
LOCKHEED P-38 LIGHTNING
N. A. F-86 SABRE
BOEING B-47 STRATOJET
REPUBLIC P-47 THUNDERBOLT
VOUGHT F4U-1 CORSAIR
NORTHRUP F-89 SCORPION
BOYS! HERE ARE 18 OF THE EASIEST BUILDING SCALE MODELS EVER OFFERED. EACH ONE IS A DUPLICATE IN MINIATURE OF A WELL KNOWN FIGHTER
WITH GUILLOW'S DIE-CUT SOLIDS, YOU DON'T HAVE TO SPEND LONG HOURS CARVING BLOCKS TO SHAPE - JUST ASSEMBLE THE DIE-CUT PARTS IN A JIFFY AND ROUND UP THE EDGES WITH A KNIFE OR SANDPAPER.
ALL YOU NEED BESIDE A KIT IS A TUBE OF MODEL AIRPLANE CEMENT - THEN YOU ARE SET FOR AN EVENING OF FUN.
ONCE YOU HAVE STARTED, YOU'LL WANT TO BUILD THE WHOLE ASSORTMENT.
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DOUGLAS AD-1 SKYRAIDER
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BOEING B-29 SUPERFORTRESS
CURTISS P-40 WARHAWK
RUSSIAN MIG-15
REPUBLIC F-84 THUNDERJET
N. A. P-51 MUSTANG
GRUMMAN F9F PANTHER
LOCKHEED C-69 CONSTELLATION
LOCKHEED F-80 SHOOTING STAR
VOUGHT F7U CUTLASS
25¢ EA.
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NEW TANDEM ROTOR HELICOPTER DESIGNED FOR BOTH MILITARY AND CIVIL TRANSPORT.
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THIS HELICOPTER HAS WON CONSIDERABLE PRAISE FOR ITS EXCELLENT WORK IN KOREA.
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DEALERS! SEND FOR LATEST CATALOG AND PRICE LIST
GUILLOW'S FLIGHT TESTED $1.00 EA.
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AIR LEADERS TOMORROW
FLYING MODEL Airplane Construction Sets
FULL SIZE PLAN • ILLUSTRATED INSTRUCTIONS • AMPLE BUILDING MATERIALS
BELL P-39 AIRACOBRA
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SPITFIRE
CURTISS SB2C HELLDIVER
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Special
Large wing span flying models with the new time saving die-cut balsa formers, ribs, tail outlines, wing tips, and landing struts.
RAZOR SHARP DIE CUT BALSA PARTS
PLASTIC PROPELLER
NO CUTTING—JUST PRESS OUT AS NEEDED!
REALISTIC SCALE AIRPLANE
GUILLOW'S
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50¢ EACH
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AERONCA CHAMPION
VOUGHT CORSAIR
SPITFIRE
BRITISH SE-5
WACO CUSTOM
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HAWKER HURRICANE
RAZOR SHARP DIE-CUT BALSA PARTS
NO CUTTING—JUST PRESS OUT AS NEEDED!
SHAPED NOSE BLOCK
PLASTIC PROPELLER
The die-cut parts in these kits make it easier for the model builder to complete his airplane. Full size plans, step-by-step illustrated instructions and patterns for stiff paper and tissue covering are also included.
manufactured by PAUL K. GUILLOW Wakefield, Mass.

Scrap Box

(Continued from page 5)

abolished completely to prevent the "pirateer modeler" from ruining a swell sport and hobby. Eliminate the possibility of three people combining their talents to walk off with the National Champion Trophy. Opinions and facts are wanted from both sides. Another opinion is voiced—"Sure, some builders never fly. Dizziness, age, and a host of other things may prevent an ardent modeler from getting the thrill of seeing his ship win." And "How about one swell trophy for the winning high point team entry and that's it," says another. All points well presented and taken fellows. We agree, the National Champ who builds the ships and flies the events himself deserves the title.

• • •

The radio boys are organizing out west. Plenty of ships are getting in the air and a bunch more are in the process of being built. A get-together meeting was held at an abandoned airstrip near Santa Ana, California to start the organization rolling. Everyone got so wrapped up in flying that not much was accomplished. Designs and equipment were closely scrutinized and a darned interesting "bull session" developed. Yours truly is even finding out where all the wires are supposed to go and why. Colby Evett had his modified Ehling designed *Paragon* out for a session. The ship was designed originally in 1942. Colby's ship has the two channel rig set-up and also sports a new British receiver. The ship has elevator, rudder, engine, and a bomb release control set-up. The Fox *.35* carries two needle valves for engine control adjustment with a relay type K & B shut-off. The shut-off is much the same as Harold Bonner's. This ship is the same one Evett flew at the Nationals. Bill Butler was out with his two ships and was doing a nice job of flying until someone decided to try his transmitter while Butler was in the air and on the same frequency. The ship wasn't damaged too much but a few faces were very red.

Two newcomers to R.C., the McHuen brothers, made some of the best flights of the day with their *Good News*. This little job carried on Arden *.099* for power and sported the very popular Aero-Trol radio. We saw the first flight these boys ever made, and it was very sharp. Everything was right out of the book and worked perfectly. These lads believe in small ships and rightly so, judging from all appearances and performances.

Our greatest trouble, when making the first flight, was reversing rudder positions when the ship was coming toward us. E. J. Brown gave us a solid tip for the beginner. When testing a new ship, let it get up high enough before trying a turn. Of course, be ready to correct your flight attitude as soon as the ship is airborne just in case. Have your control box in the right position so you will know what control is coming up first. For gosh sakes, leave the engine a bit rich on that first flight and don't put too much fuel in the tank. We had a four minute screaming run on our first flight and got about 1500 feet in the air in short order. Would have sold the crate and equipment cheap about that time but all ended well and we're still flying the old *Bug*.

We were interested in a discussion about the KD2R3 *Drones* (target ships) and the type of equipment they use. These jobs carry a 72 h.p. engine. The KD2G2 carries the pulse jet (110 lbs. static thrust). Both ships carry the RPR1 receiver. Transmitter is an RC56A, and is a one frequency job as is the receiver. The transmitter put out five different tone signals which the receiver picks up one at a time. Each of the five tubes in the receiver respond to certain tone (cycles) signals which energize their circuit. This in turn operates its particular relay. The relays are hooked to servos which operate the various controls: right, left, up, down, and neutral. When no tone is sent out, the parachute is dropped out and the ship settles down safely to earth or sea which ever the case may be. All radio equipment is in a watertight compartment. Flying one of these 200 m.p.h. hot rods is an art. The *Drone* will do anything a big ship will do and probably much faster due to size. The cat and mouse game goes on—target ship vs. firepower. The enemy of the *Drone* is anything from a five incher on down. These ships have a 138" span, 147" fuselage, 50" stab, and the prop is about 44" in diameter. Gassed loaded weight is approximately 320 lbs.; are weight 150 lbs. The ships are launched from a compressed air catapult.

• • •

Toshihisa Watanabe gave us a rundown on some of the model activities being held in Japan. We were surprised at some of the times turned in at Matsudo (former aerodrome). Sponsors of the meet were the Model Airplane Federation of Japan and the Maimichi Press. The contest was held under adverse weather conditions with a 5-7 meters per second of wind blowing. Rain also made its appearance but the meet went on. At the Fourth All Japan Model Airplane Contest the following times were turned in: Hiroshi Sawada turned 104.40 with an O. S. *29* in B Speed, Kanejiro Kondo turned 133.33 with a K.O. *60*, and Kikuo Takechi burned the circle with his O.S. jet to the tune of 137.40 m.p.h. We've had the opportunity of seeing some of the Japanese made engines and they seem to be made very well. The Plymouth Motor Corporation through the Anzen Automobile Company, supported a Plymouth eliminations to chose winners to make the "big meet" in the states.

• • •

Jetex is a favorite with Bill Byshyn of Brooklyn. Bill's efforts have been turned toward the scale jobs, his latest being an Heinkel *He-162*. This ship is powered with a Jetex 100. Span 17-1/2", length 23". It deviates from scale in increased wingspan and a bit more stab area. It was found that the cowl on this ship caused too much internal turbulance so the ship was flown without it. Bill has drawn up about every type of fighter (jet powered) in the books and is still going strong.

• • •

The Wakefield committee did a bang-up job of organizing the eliminations and finals. Although the United States didn't win at the "big" meet, at least all hands know that an all-out effort was made to get the best ships to Finland. To everyone concerned, from the fellows who got out and flew to the committees that did all the leg work and tabulating, we sincerely wish to say "well done." Hope to see that "mug" come to the good old U. S. next year.

—by JIM SAFTIG

The Gee Bee

(Continued from page 32)

the *Gee Bee* left its marks in aviation history. It undoubtedly was the fastest landplane of the day even though it never held the official record. Other *Gee Bees* followed from the Granville Brothers workshop and these tricky but fast racers were always a threat in any race they entered.

WING: Cut 36 wing ribs from 1/16" balsa and two from 1/8" balsa. The eight center section ribs are cut down 1/16" top and bottom to allow for the sheet covering. From 1/4" balsa cut out the wingtip parts. Assemble each wing panel separately. Pin leading edge, spar, and trailing edge to a flat board, then cement in the ribs. Add the wingtip parts and cover the upper center section with 1/16" sheet balsa. When dry, sand the panels to final shape. Cement the wing panels together, blocking both wingtips to a height of one inch to form correct dihedral angle. Cut a 3/8" x 1/2" x 2" block to fit the center section and cement in place to form the control plate mount. Leave the center section bottom uncovered. Bend the wingtip guide from music wire and cement in position. Cement a 3/4 ounce lead weight in the right tip.

TAIL SURFACES: Cut stabilizer and elevator outlines from 1/4" balsa, spars from 1/8" x 3/8" hard balsa, and ribs from 1/16" balsa. Cement parts together and sand to streamline shape. Insert the 1/16" sheet covering flush with the center section as shown. Install

your favorite type of hinges and control horn. Note that the control horn is angled forward to provide sufficient clearance from the rudder post.

Cut rudder outline from 3/8" balsa, spar from 1/8" x 3/8" hard balsa, and ribs from 1/16" sheet balsa. Cement parts together and sand to final shape.

LANDING GEAR: Bend the two wire landing gear struts to the shapes shown in the front and side views. The use of a vise and a heavy hammer will help greatly in forming the heavy 1/8" dia. music wire to shape. This forming should be done slowly and carefully to insure proper alignment of the gear. The joint where the two struts meet should be wrapped with copper wire and well soldered. Place wheels in position with a washer soldered on each side. Check to be sure that the wheels can not rub against the struts.

Each of the wheel pants is made in a layer of four 1/4" sheets and two 3/16" sheets. Cut these parts out and cement together to form two right halves and two left halves. Temporarily tack cement the halves together, then carve and sand the wheel pants and struts to final shape. Split apart and hollow out to clear the wheels and the wire struts.

FUSELAGE: Due to the *Gee Bee's* short nose moment arm, the rear end of the fuselage should be kept as light as possible by cutting away the bulkheads and the centerplate wherever possible. From 1/8" sheet balsa cut the center plate of the fuselage to the size shown in the top view. It will be necessary to make this in two halves, cemented together down the center line. Mark the bulkhead positions on both sides of the center plate. Cut out upper and lower bulkheads numbers six to twelve from 1/8" balsa. Pin the center plate to a board with the rear end of the plate overhanging the edge of the board. Cement the lower halves of the bulkheads to the centerplate taking care that all the bulkheads are vertical. Cement the 1/8" x 3/8" rudder post in place at the end of the centerplate. Bend tail skid to shape and cement in place against the centerplate and rudder post. Later the tail skid should be sewed to the centerplate with thread. Start planking the fuselage with 1/8" x 3/8" soft balsa strips, beginning at the center plate and working both sides evenly until fuselage is covered down to the wing position. Now while the fuselage is still pinned down to the board, cement the wing in position, taking care that the wingtips are level with the board and that the flat bottom of the wing is parallel with the centerplate.

Install the landing gear in the center section of the wing. Cut away the ribs where necessary to make room for the gear. When the gear is fitted into position and properly lined up, apply two liberal coats of cement to all possible joints. Cover the wing center section with 1/16" sheet and add the remaining pieces of bulkheads seven, eight and nine. Remove the entire assembly from the board and install the control plate with a 4-40 machine screw through the mounting plate and the wing. Finish planking the bottom of the fuselage. Securely cement the balsa wheel pants in place against the landing gear wires and the wing.

Cement the motor mounts securely in position on the center plate, then cement the upper bulkheads in place. Plank the sides of the fuselage up to the level of the stabilizer. Mount the stabilizer in place and hook up the control push rod and the lead out wires. If an engine cut-off hook is to be used, mount an extra control push rod extending forward through the front bulkheads and into the cowl section. If a dummy pilot is desired, cement in a cockpit floor of 1/16" sheet balsa, instrument panel and other cockpit details at this time. Set in the top portion of the fin cut from 3/8" balsa and finish planking the fuselage. Cut out planking to form the cockpit. Cement the rudder in place with a 1/4" offset to the right.

COWLING: Cut bulkheads one, two, three, and four from 1/4" sheet, cement together with the grains running in different directions for added strength. Carve and sand to shape. Cut plywood ring number five from 1/8" material. Start assembly of the cowl by using four planking strips of proper length cemented at equal spaces around bulkheads four and five. Check to be sure cowl is lined up properly, then when dry, add the rest of the cowl planking strips. Carve three small maple blocks to shape for cowl mounting blocks. Drill holes through the plywood ring and the blocks, and using 4-40 machine screws and nuts, bolt the blocks to the cowl. Now apply cement to the rear faces of the blocks and pin cowl in place against the front end of the fuselage until dry.

ENGINE & TANK: The original model was powered with a K & B Torpedo *.19* which gave very satisfactory performance, having a speed of about 75 mph using a 10-6 Power Prop. Any *.29* engine or powerful *.19* engine may be used to power the *Gee Bee*. In order to mount engines having rear rotary valves it may be necessary to cut away part of bulkhead number six for additional room. Make up a one ounce tank and mount it on the motor mounts with the fill and vent tubes coming down and out the space between the cowl and the fuselage. Cut holes in the cowl for access to the glow plug and for the needle valve. No exhaust hole is needed if the interior of the cowl is cleaned after each flight to prevent possible fires.

FINISHING: The original model was built entirely with fuel-proof materials: Aero-Gloss cement and plastic balsa, Butyrate dope, and *Sta* colored dopes. Sand entire model until it is smooth and then cover all parts, including the fuselage and cowl, with silk. Give the model several coats of Butyrate dope until the pores in the silk are filled. The large fillet between wing and fuselage may be easily formed by using a combination of silk and a surfacing putty. First make as good a fillet as possible using wet silk and then after it has been doped, smooth out the low spots, etc. with applications of a putty such as Aero-Gloss *Plastic Balsa*. This type of fillet can be made very light and very smooth.

When model has been sanded, doped and sanded to a good surface, paint entire ship with yellow *Sta*. Three brushed coats should be sufficient. With a soft pencil, draw the scallop design on wing and fuselage. Mask off the design with narrow masking tape, and paint with black *Sta*. Use black decals for all

numbers and letters. Strip some black Trim-Film to 1/16" widths and mark the aileron, rudder and cockpit lines. *Gee Bee* is put on the fin with a small brush and black *Sta*. The small words *Super Sportster* are put on with India ink and a pen. If the cowl markings are desired, they can be painted on with white *Sta*. These markings consist of a group of three buildings with the words *City of Springfield* and *Powered by P & W Wasp Jr.* See photos and details. Use a thin coating of clear *Sta* (sprayed or very carefully brushed) over the letters and decals to seal them down. Cement bubble in place. If flying and brace wires are desired, use .008 dia. music wire and thread wires through the model as indicated on the plans.

FLYING: If your *Gee Bee* is to be a stable and smooth flying model, it is essential that the balance point is as marked on the plans — 3/8" back from the leading edge. Add weights to the nose or tail if required. Be sure all surfaces are at zero degrees incidence. Make certain that the rudder is offset 1/4" to the outside of the circle. Be sure that the wheels turn in the pants freely and that the model rolls straight on the ground.

Due to the *Gee Bee's* short fuselage and the high angle of attack when sitting on the ground, it is necessary to hold the controls in the full "up" position at the beginning of take off to prevent a nose-over. As soon as the model starts to roll and gain speed, neutralize the controls and let the *Gee Bee* take itself off. This method will give the long, low take off so necessary for team racing. *Gee Bee* will be smooth, yet responsive in the air and will have a good glide after the motor quits. However, since the landing gear is completely rigid, it is best to make smooth wheel landings. In other words don't stall it in, but fly it right down to the ground and "grease it on" like a speed model. Like most models with wheel pants, *Gee Bee* should be flown on asphalt or hard dirt fields.

BILL OF MATERIALS:

2 — 1/16" x 3" x 36" Balsa Sheet.
3 — 1/8" x 3" x 36" Balsa Sheet.
1 — 3/16" x 3" x 36" Balsa Sheet.
3 — 1/4" x 3" x 36" Balsa Sheet.
1 — 3/8" x 3" x 12" Balsa Sheet.
1 — 1/8" x 6" x 6" Plywood.
2 — 3/8" x 1/2" x 12" Hard Maple.
24 — 1/8" x 3/8" x 36" Soft Balsa.
1 — 1/8" x 3/8" x 36" Hard Balsa.
1 — 1/4" x 1/4" x 36" Hard Balsa.
1 — 1/4" x 3/4" x 36" Trailing Edge Balsa.
1 — 1/4" x 1/2" x 36" Hard Balsa.
1 — 1/16" x Dia. Music Wire 36" length.
1 — 1/8" Dia. Music Wire 36" length.
1 — "Fireball" Bubble Canopy.
1 — Pair 2-1/2" Narrow Wheels.
1 — Bellcrank and Control Horn.
1 — Square Yard Silk Covering.
Machine screws, liquids, decals.

Fokker E-1

(*Continued from page 20*)

momentous conclusion: you couldn't very well fly a plane and shoot a gun accurately at the same time unless the gun was attached to the airplane. On the ground, Garros bolted the Lebel rifle on top of the cowling in front of him, pointing forward. Where the line of fire cut through the popeller arc, he boldly attached some wedge-shaped steel plates to each blade. Enough bullets, he thought, would get through to do some damage. About six out of ten did get through—enough to knock down a couple of German planes.

This hit and miss proposition had one drawback—the bullets constantly pounding the propeller wedges put unusual stresses on the propeller which Garros cheerfully guessed might shatter the prop. That's exactly what happened to Garros. He was forced down behind the German lines one day through prop failure and made prisoner.

Anthony Fokker shortly was called in by German authorities to see Garros' Morane, and was asked to see if the shielded propeller idea could be improved on and put to use for Germany. A practical mechanic, Fokker immediately saw that the solution to the problem was not in protecting the prop from harm by the bullets, but lay in a method of causing the gun to fire only when the prop blades were out of the line of fire.

Fokker's system of cams and push-rods, by which the propeller was made to fire the gun, was attached to a single-seat monoplane scout plane he had built for the German Air Force. Subsequent tests proved the synchronizing mechanism completely workable and thus was the means for modern air-warfare born.

The first Fokker *E-I* was turned over to young Oswald Boelcke, a G. A. F. Lieutenant and former school teacher. On his third flight over the lines, Boelicke succeeded in bringing down a French plane. The Germans enthusiastically ordered as many Fokkers as possible, fitted with guns and synchronizing gear. The latter were hand-made by Fokker. A few days later Max Immelmann was turned loose in the second *E-I* and obtained immediate results. A month later a half-dozen additional *E-Is* were in action, taking a terrible toll of nearly every Allied plane they met in flight.

The advantage was on the side of the German pilots. They simply approached unsuspecting Allied planes from the rear, poured out a burst, and down they came. *E-I* pilots were forbidden to fly over the Allied lines in order to keep the synchronized gun from falling into enemy hands. The toll these stinging little *E-Is* wrought was terrific. For nearly five months, the Germans had superiority in the air and Allied losses mounted.

But one foggy morning a Fokker *E-II*—an improved type—landed intact on a French airfield and the secret of the gun was out. The German pilot simply had become lost in the soup.

Before the Fokker monoplanes of this period were retired from front line service, four distinct types were produced, *E-I* to *E-IV*, inclusive. All were very similar in appearance, differing only in size, weight and power. They were developed from Fokker's 1914 M-8 monoplane in which he looped and stunted all over Germany just before the outbreak of W. W. I. Pressed into service because they were available, the first dozen or so such single seat "scouting" planes fitted with the machine gun were called the *E-I*.

Although not designed as gun fighters, these little planes could not miss—they had no competition! The *E-I* was powered by an Oberursel UO model 80 hp rotary of seven cylinders. Overall length was 22 ft. 3 in.; wing span was 29 ft. 6 in., and height, 8 ft. 6 in. It weighed 787 lbs, bare (not to be confused with "empty" weight) and 1,240 lbs. fully loaded. The difference was made up in fuel, oil, the machine gun, ammunition, pilot and equipment. So loaded, the sea level top speed was 80.5 mph. The *E-I* climbed to 3,300 ft. in 7 min.; to 6,600 ft. in 20 min. and to 9,900 ft. in 40 min.

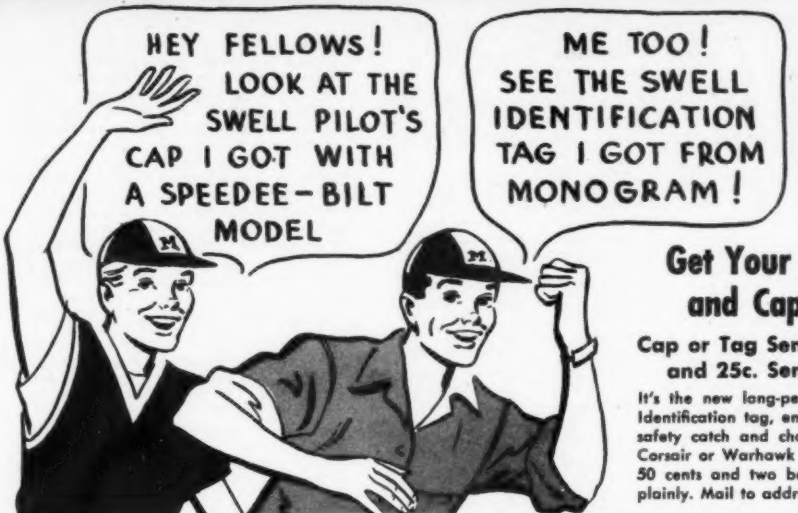
Models *E-II* and *E-III* were by far the most successful of the Fokker monoplanes. The two models were identical except for engines. The *E-II* was fitted with an Oberursel UI, 9 cylinder rotary of 100 hp, and the *E-III* carried an Oberursel UR II delivering 110 hp. More of these two types were built than any other of the Fokker monoplanes.

Fuselage structure—Steel tubing was used throughout the basic structure. Except for a few secondary members, longerons, uprights and cross pieces were joined by welding. The frame was cross braced with steel wire. In side elevation the fuselage was approximately symmetrical. It was flat on all four sides except forward of the cockpit, and finished off at the tail in a horizontal knife edge.

The curved coaming in front of the pilot was a segmental continuation of the engine cowl, forming the only protection from the wind for the pilot. Windshields were fitted, of course, but did little good and were often removed by the pilots. The coaming was formed of sheet aluminum resting on and attached to tubular steel formers and the longerons. Inspection doors, filler caps for the oil tank and for other necessary items were provided as needed.

The engine cowling was formed of sheet aluminum, cut away at the bottom so ex-

(*Continued on page 48*)



Identification Tag Will Be Engraved With Your Name

Get Your Pilot's Tag and Cap—Fellows!

Cap or Tag Sent for One Speedee-Bilt Box End and 25c. Send Two Box Ends and 50c for Both.

It's the new long-peak pilot's cap that smart fellows are wearing. Identification tag, engraved with your name, is airplane metal, with safety catch and chain to fit the wrist. Send end from Sabre Jet, Corsair or Warhawk box and 25 cents in coin for your choice. Send 50 cents and two box ends if you want both cap and tag. Write plainly. Mail to address below.

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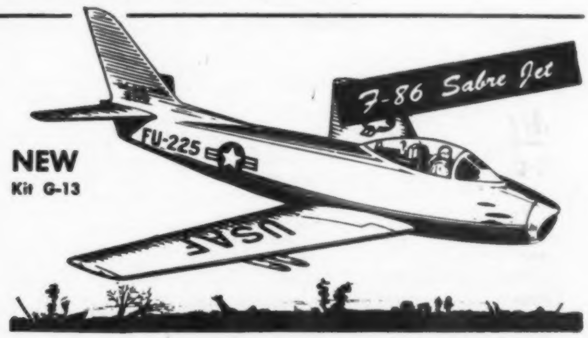
We told you last month how thrilled we were with our three new SPEEDEE-BILT MODELS—the models so many of you asked for. We know you are thrilled with them too, fellows, and that never before have you seen such fine kits and such big values.

And when you get to building them—Oh Boy! Such fun! Such realism! The three and four-bladed plastic props and other plastic parts added to the other outstanding SPEEDEE-BILT features, make building so easy and make you so proud of your finished models.

Build all of the new models. Get a SPEEDEE-BILT long peak pilot's cap and the identification tag too. They add to the fun when you fly your models.

If no dealer in your neighborhood order from address below. Send 25c additional for shipment from nearby dealers stock.

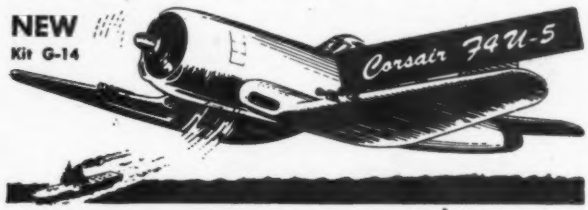
NEW
Kit G-13



Swept-Back Wings • Deadly Fire Power

All These Parts in This Kit—Plastic Cowling—Plastic Pilot—Plastic Rockets (4)—Plastic Exhaust—Famous Monofoil Wing (Right and Left)—Prefabricated Fuselage and Tail Parts, in Full Color and Die Cut—Plastic Canopy (Detail Molded)—3-Color Decals—Rubber Wheels—Metal Landing Gear, (Specially Formed) — Detail Picture Plans and 9 other parts.

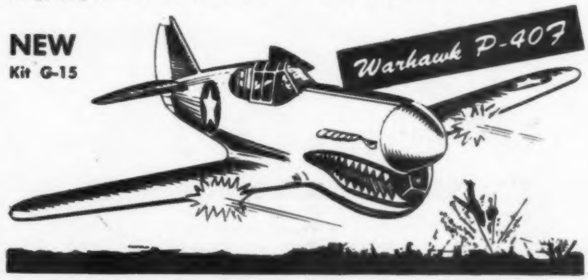
NEW
Kit G-14



Gull Wings Easy to Build • More Simplified Construction

Corsair Parts List—Four-Bladed Plastic Prop—Plastic Cannon—Plastic Pilot—Plastic Cowl—Prefabricated Fuselage and Tail Parts, in Full Color and Precision Die Cut—Monofoil Wings (Right, Left and Center Sections)—Three-Color Genuine Decals—Rubber Wheels—Landing Gear (Specially Formed)—Plastic Canopy (Detail Molded) — Rubber Loop — Detail Picture Plan and 11 other parts.

NEW
Kit G-15



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Build With These Parts—Three-Bladed Plastic Prop with Plastic Spinner—Plastic Pilot—Plastic Exhausts—Plastic Cowling—Prefabricated Fuselage and Tail Parts, in Full Color and Precision Die Cut—Monofoil Wing (Left and Right—Formed Plastic Canopy—Rubber Wheels — Complete Landing Gear—Three-Color Genuine Decals—Rubber Loop—Detail Picture Plans and 12 other parts.

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Here Come The Jets

(Continued from page 19)

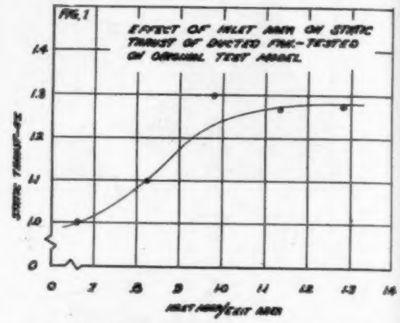
counter the lower ideal efficiencies as a result of high exit velocities. The tests to date show that if the ducts are carefully designed and fan tip clearance is kept to a minimum the jet models fly very well.

The critical feature of the system is designing suitable inlets and exists. A study of existing jet fighter designs indicated a trend to larger inlets and exists because of grouped engines or addition of afterburners. Actually any design where the exist opening can be enlarged without destroying outline proportions can be powered by a ducted fan. This is true because the inlets can be camouflaged. The *F7U-1* picture shows the inlet opening It can be seen that the air merely drifts sideways into the fuselage and is then accelerated to the rear. Thus the side area of the screened opening becomes the inlet area and this area is much larger than the fan frontal area. Another form of opening is a ramp type as shown on the *F90;* however, this type is not so realistic and is more difficult to design. Figures one and two at the end of the article show the effect of the inlet and exit areas on static thrust. This data is actually measured data taken from the models themselves. Only a few tests have been run on the *F7U-1* to date but it has flown successfully and appears to have good power characteristics. Figure three shows the effect of engine speed on static thurst. Also shown is the large gain in static thrust when an engine powerful enough to drive a six-blade fan was installed in the airplanes. Since installation of an .049 engine in the *F90*, it has flown consistently.

A word about stability to indicate the basic problem. Model stability is in a large measure determined by power effects. This is so because the model is unable to change trim settings between power-on and power-off flight. A good feature of the ducted fan system is that it is torqueless. The system is torqueless because flow straighteners must be added just behind the engine to effect a pressure recovery and increase the axial velocity of the air. These flow-straightening vanes also support the engine mount as shown in the diagram of the *F90*. The fact that airplanes have swept wings and large fuselages does not rule out the possibility of scale free flight. Modern fighter design demands upon exhaustive stability and control studies and most of them are designed to have only slight spiral tendencies. A little dihedral and the usual enlargement of the horizontal surfaces is generally sufficient for stability. The absence of torque in the ducted fan allows easy flight adjustment. Just be sure the center of gravity is a little ahead of the aerodynamic center of the model. A good example of how stable these airplanes are is the *F7U-1*. It is exact scale except for about two degrees of dihedral; yet it flies very satisfactorily.

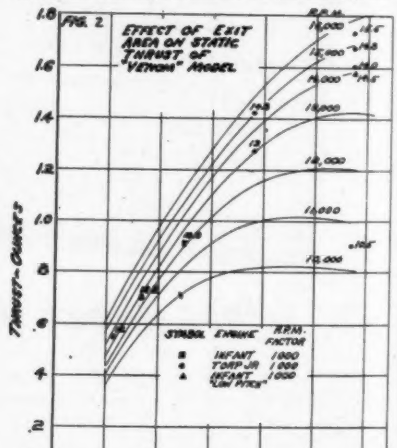
The *F90* and the *F7U-1* are the third and fourth models of this nature to be constructed. The first model was a flying test stand and it made many flights but had no particular scale proportions. The second model was scaled from the DeHavilland *Venom* but in spite of its stable appearance the jet effect on the horizontal surface created serious power effects. This fact almost discouraged the further development of the system, but after building the *F90* it proved that the jet could fly. Possibly a higher position for the horizontal surface on the *Venom* will correct the stability problem.

The *F7U-1* has been flying on *Infant* power and climbs at a weight of five ounces. The fan for the *Infant* is three bladed and is made of 24SO aluminum. Balancing is no more critical than for regular propellers. One difference is that the fan is in a tube and the tip clearances must be fairly close—about 1/16 of an inch. This means that at some critical speed the engine will vibrate. This must not occur at the operating speed. If it does, the mount



must be made either stiffer or softer. If the mount is softer, the engine will pass through the vibration stage and then smooth out during adjustment. If the mount is made stiffer the engine will never reach the vibration stage. Either change will be satisfactory provided the mount structure is not too seriously weakened.

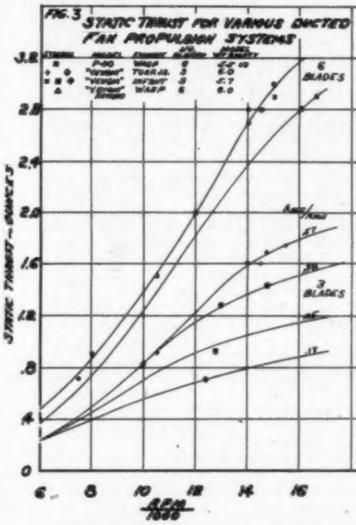
Certain operational problems had to be worked out before flight testing could be started. The most important problem was engine access for starting, adjusting, and for installation and removal. An access door on top of the fuselage seems to be the most prac-



tical means of servicing the engine. This door must have some sort of spring latch that snaps on, closing the door. This reduces time between starting and launching to a minimum. Starting was simply accomplished by using a narrow strip of friction tape. The tape was wrapped around a hub at the base of the fan and then pulled for starting. The hub was made by putting a hole in a dope bottle cap and mounting it behind the fan. Engine adjustment after starting is accomplished with an extension rod for the needle valve. This extension may be left on the engine after the tube is closed if a slot is provided in the access door. It has been found, however, that the engine can be adjusted with the door open, the extension

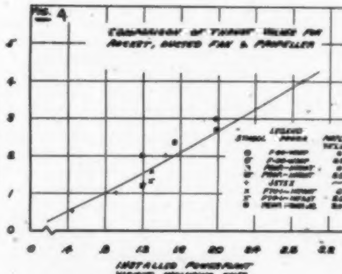
rod removed and the door closed just before launching. All models have been hand launched to date in lieu of building a gear. This also makes more realistic flights since full scale jets all have retractable gears.

Installing and removing the engine is simple if a long screwdriver is purchased at the dime store; the screwdriver should be able to reach the mounting bolts when it is introduced through the intake openings. A spinner on the fan will give some slight performance gain but it is not necessary for good flying. Fuel tanks may be mounted anywhere but a forward location is preferable. The engine should be ahead of the airplane center of



gravity so that if a larger engine is desired it will not destroy stability.

The duct walls to date have been made of 1/32 inch balsa sheet stock. Soak them in water and wrap them around any convenient tube of approximate size. Hold them in place with rubber bands until dry. The structure is fairly conventional. Bulkheads are stronger and easier to make if they are made from a sheet of balsa covered on both sides with tissue paper. Multiple stringer construction for the wing makes a resilient structure while maintaining a good aerodynamic surface. Care must be exercised in designing the carry-through structure for the wing since no



spar can be placed in the jet tube. The multi-stringer construction eases the carry-through problem and gives high torsional rigidity to the wing.

In conclusion it can be said that true scale jet flying is possible with existing devices in the model field. Most AA engines will run at 15,000 RPM which is sufficient for good thrust. The chart shown in figure four compares ducted fan, rocket, and propeller thrust on the basis of total power plant plus fuel weight. It can be seen that the ducted fan is satisfactory and in line with other means of propulsion. Much development work remains but the device has been proven so you experimenters can really get some thrills if you hitch your swept wings to a ducted fan. END

Can You Really Fly

(*Continued from page 10*)

taking the ship from carrying box at the flying site and flying. Assemble ship as described above and check by looking model over carefully. Select a loop of rubber two or three inches longer than motor stick. Do not attempt to wind by hand as the propeller is too fragile should the shaft hook snag while tightening slack in motor. Use a winder of about 20-to-one ratio or more and stretch motor about three times its length. Put in about 500 turns and once again look ship over before launching. Release model gently (less than walking speed). It should hold its own, but if it dives, increase incidence about 1/16" at a time by pulling front strut up in the paper tube. If ship has stalling tendency, reduce wing incidence by pulling rear strut up about 1/16" at a time. When ship looks properly trimmed increase winding by 200 or 300 turns at a time until maximum is reached. By experimenting with different rubber thickness and length of loop you will obtain the maximum performance from your model.

HAND LAUNCHED GLIDER: Bob Dargand's *Lucy* series of gliders have had unusually good results both indoor and outdoors. His latest *Lucy XX* holds the Class B World Indoor Record with the amazing time of 1:13.6. The wing has a straight leading edge with elliptical tips and made from 1/4" x 3-1/2" stock. Maximum camber thickness is 25 percent back of the leading edge and a sharp leading edge is used. The airfoil has a flat bottom and the wing is mounted at zero degrees incidence on top of the fuselage. The horizontal tail is a thin airfoil section and mounted with zero degrees incidence on the bottom of the fuselage. Rudder is mounted straight. Center of gravity is about 85 percent back from leading edge. His outdoor gliders have a ten-degree sweepback in the wing which places the C.G. near the trailing edge. Jasco tapered 3/16" x 3" stock is used here and maximum camber thickness 33 percent back of leading edge. It is slightly rounded under leading edge and has a flat bottom. All parts are given polished finish before final asembly.

Both types of gliders may be flown outdoors for test flights. Select early morning or late evening during calm air. A grass field such as a baseball park will not nick up the model and absorbs some shock in event of hard landing. Bob uses an adjustment in flying gliders similar to that Tex Rickard originated in the mid-1930's. A right-handed person should warp the rudder to left slightly, right-wing trailing edge warped down (wash-in). In Bob's model it is necessary to warp the whole trailing edge down slightly on the tail or it will require too much clay to balance properly. Hold glider with thumb and forefinger, then flip model straight away from you. It should rise slowly almost to a stalling position and then kick over the hump into its left circle glide pattern. When you're satisfied and ready for a fairly hard launch, give it enough throw to follow through without stalling. Maximum performance will be obtained when ship comes out just about overhead or a little to the right. Pull-out too far in front, back or left, means it is not perfectly adjusted and you are wasting your precious arm. The glider should launch into a long sweeping climb with the roll-out coming in as the last bit of power fades and then go into its flat left glide without hesitation. Gliders flown this way assume a nose-high attitude in gliding. Once you get to know your ship you will realize that hand launched gliders offer much satisfaction for the small work spent building them.

SPEED: Keith Storey is one of the most successful speed flyers, having won several Plymouth and National events. The set-up used by him on his ships is described here. His wing airfoil is an N.A.C.A. 2209 set at zero degrees incidence. Horizontal tail surface is a thin symmetrical section made from 1/16" thick plywood and mounted at zero degrees incidence. The motor is mounted with two degrees left-thrust to lessen the pull on flying wires and also serves to increase efficiency of the propeller. No downthrust is used on this type of ship. Since there is no rudder to offset torque, it is essential to have a wide tread dolly that will run true until the ship has built up speed before take-off. Torque is then no longer a problem as centrifugal force holds the inside wing level due to the flying wires. Large wheels help especially in flying off grass. The C.G. is 20 percent of the chord and the bellcrank is mounted 30 percent of the chord.

Choose a smooth flying field and walk around the flying circle, removing all small rocks or obstacles that may cause trouble. A calm time of day, early morning or late evening, is safest to test fly your ship. Instruct your mechanic helper on his part in starting and arm signals for releasing ship. Unroll flying wires and place the handle exactly as it will be used on ship. Fuel up and start the motor with a mechanical starter. Run motor up to top R.P.M. A rich mixture may work best as motors tend to lean out after gaining speed. Take your place at the control handle and when you're sure the motor sounds good, give the prearranged release arm signal. The helper should be holding ship down on dolly and it in turn should be pointed straight ahead. A slight push on the ship will help the propeller take hold quicker and accelerate. Let the ship run on ground until it reaches flying speed, about 33 percent to 50 percent of circle and give a little up elevator for taking-off. Neutralize controls as soon as possible, not going over 15 foot high, and level off to build up speed. Climbing any higher may result in a crash. Go around several laps to familiarize yourself with the controls. When the ship has reached its maximum speed raise your arm to signal the helper that you wish the ship to be timed. Hold ship level in test run. After motor stops ship glides for several laps and can be brought in for nice smooth landing. By stepping back and to left, you can tow ship and keep under control at all times for good landing.

TEAM RACER: Many members of the F.A.S.T. Club, which originated this new event, use a thinned Clark Y airfoil of from 1/4" to 1/2" thickness, set at zero degrees incidence. This airfoil gives the ship a high top speed, but with the 125 sq. in. area, the landing speed is fairly slow. The horizontal tail surfaces are a thin symmetrical airfoil of from 1/16" to 1/8" thickness set at zero incidence. No downthrust or side thrust in this type of model. Rudders are set with five degrees right in order to offset torque. The lead wires are installed with 1/4" slant to rear on wing in order to keep the nose pointing out and pulling on the lines. A wide landing gear is essential to prevent ship from turning in upon release. A minimum of seven inch tread is recommended with eight to ten inch preferred. Mount the landing gear true so wheels run straight ahead. The weight of the flying lines and the slight tension caused by the pilot often causes the left wing to dip upon take-off and turn ship into the circle with disastrous results. Therefore a counterbalance weight of two oz. of solder weight is placed inside the right wingtip to hold the outer wheel on ground. The C.G. is at a point ten percent back of the leading edge and the bellcrank is mounted 35 percent of the chord.

Select a level field and remove all rocks or anything in the flight circle that may cause trouble. Your mechanic helper should be instructed on arm signals for releasing ship. Unroll flying wires and lay them out just as they will be used on ship. For testing, it is wise to use a propeller with slightly higher pitch such as a nine inch dia. by ten inch pitch. This will give you a slower and longer take-off which is safe at this critical time. Later a 9 x 8 propeller for high speed can be installed. Start motor and run it up to top R.P.M., then take your place at control handle. The helper should hold the ship with nose pointing out about five degrees angle for taking-off. It is very important that your mechanic does not push the ship, just let go. Explain this to him. Raise free hand and when you are sure everything is ready, drop this hand as the release signal. Let the racer gain speed by running from 50 to 70 percent of circle on ground, then give it a little up elevator and level off ten to 15 feet high. Experiment with the controls after a few laps and become familiar with its handling characteristics. Hold the ship level and when the fuel runs out, nose down slightly to land.

(*Continued on page 44*)

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Don Tune
L.A., Calif.
Perf: 13:29, Torp .049
6/4 Power Prop

Cl. AA Open
Dick Everett
San Diego, Calif.
Perf: 22:05, Torp .049
6/3 Top Flite

Cl. AA Senior
Jack McComb
Columbia, Mo.
Perf: 15:07.6, Wasp .049
6/4 Top Flite

Cl. B Open
Ernie Shailor
Detroit, Mich.
Perf: 21:41.4, Forster 29
10/3½ Top Flite

Cl. C Junior
Curtis Franke
San Antonio, Texas
Perf: 18:43, Torp 32
11/6 Top Flite

Class C Senior
Don Murray
West Point, Ga.
Perf: 22:00, Triumph 49
11/6 Top Flite

Cl. C Open
Bob Ottoman
Medford, Oregon
Perf: 28:05.4, Torp 32
10/6 Top Flite

Row Junior
Bill Lofland
Abilene, Texas
Perf: 4:11.8, Veco 29
9½/6 Power Prop

Row Senior
Edward R. Mate
Chicago, Ill.
Perf: 11:27, OK Cub 09
7/4 Top Flite

U. S. NAVY

Radio Control Bombing
Open
Clifford Schaible
Roselle Pk., N. J.
99½ pts., McCoy 19
9/6 Top Flite

Carrier Control Line
Open
Bob Lutker
Fort Worth, Texas
253 pts., Fox 35
10/6 Top Flite

PAA LOAD
Class AB

Junior
Michael Cook
Glendale, Ohio
Perf: 3:36.6,
Ohlsson 29
11/4 Top Flite

Open
Herb Kothe
Grand Prairie, Texas
Perf: 15:19, Torp 29
11/4 Top Flite

CONTROL LINE

Speed Cl. A
Junior
Tommy Davis
Atlanta, Ga.
110.56 MPH, McCoy 19
7/9 Power Prop

Precision Acrobatic
Junior
Harris Grimes
Atlanta, Ga.
324 pts., Veco 29
10/6 Top Flite

Flying Scale
Junior
Jimmy McRoskey
Iredel, Texas
KNB-32
9/6 Top Flite

Precision Acrobatic
Senior
Don Ferguson, Jr.
Newtonville, Mass.
389½ pts., Fox 35
10/6 Top Flite

CONTROL LINE

Flying Scale
Senior
Juel Clevenger
Kansas City, Mo.
Atwood 49
10/8 Top Flite

Precision Acrobatic
Open
Lou J. Andrews
Norwood, Mass.
382 pts., Fox 35
10/6 Top Flite

Flying Scale
Open
Chief John K. Abbott
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It will continue for another lap due to its speed, but as the ship slows, you can ease her in for a two-wheel rolling landing. A little footwork on your part will help in landing by stepping back and to left side to keep lines taut. Try stooge take-offs when you are sure of your ship.

STUNT: J. C. "Madman" Yates is well known for his precision acrobatic stunts. His ships are realistic in appeaarnce and performance. He uses an N.A.C.A. 0018 symmetrical airfoil set at zero degrees incidence. The horizontal tail is a symmetrical section also set at zero degrees. Rudder is offset four or five degrees to right in order to offset torque. The right wing is warped down on leading edge (washout) about 1/2 degree to aid in offsetting motor torque. No side or down thrust in motor. Mount it straight away. J. C. believes in using plenty of power and depends on the Orwick .64 engine and 12 x 7 Y&O propeller for maximum efficiency. Add enough weight to outside wingtip to slightly over balance the weight of the lead wires on the inboard wing. J. C. builds the complete fuselage, motor and tail assembly, then mounts wing in proper position. Center of gravity is 25 percent back from leading edge and bellcrank also is located at this point. The location of lead guide is very important. Center of the two wires at wing tip should be about 1/4 to 3/8" back of C.G.

A level field that is smooth and free of rocks, etc., is best for testing your ship. Be careful where you fly and look for any high-tension electric lines. Stay away from them as they are extremely dangerous should your ship touch them. Now unroll the flying wires and lay control handle on ground just as it will be used for flying. Instruct your mechanic helper on arm signals for releasing ship. Fuel up and start motor. Run it up to R.P.M. and take your place at the control handle. The ship should be held by the mechanic so nose points out five degrees. He should be instructed on this and also be told not to push on releasing model. When motor sounds good and you are sure everything is O. K. give the prearranged arm signal for release. Hold the ship on the ground until it gains flying speed and give a little up elevator after running about 25 to 33 percent of the circle. Level off after gaining ten or 15 feet and continue level flying for several laps to get the feel of the controls. Don't try any tricky maneuvers on this first flight. Some simple diving, climbing and perhaps a wing-over may be tried at this time. As the end of motor run approaches, level ship and hold until engine conks. Nose down slightly to keep flying speed and just before ship touches give a little up elevator for landing. You can control the landings by stepping back and to left and tow the ship. This is especially effective if ship shows any tendency to stall.

U-C FLYING SCALE: While flying scale model ships involve the maximum of time and workmanship, the author has found that they compensate for this by being fairly easy to adjust for flying. A model of the W.W.1. Spad employed a Clark Y Airfoil in both wings, set at zero degrees incidence. This type of flat-bottomed airfoil is easily mounted as you have no trouble in locating the reference line. Also it performs well in the air and results in slow landings which are desirable on scale ships. The horizontal tail is symmetrical and mounted at zero degrees incidence. Motor is mounted with zero degree thrust in plan and side view. The rudder is held to vertical fin with aluminum alloy tabs for adjustment on the flying field if necessary. Using a 11 x 6 propeller on the *Triumph .49* motor required ten degrees right rudder, but if high pitch propellers such as 11 x 8 are used, then increase to 15 degrees right rudder in order to offset torque. Mount the landing gear so wheels run straight ahead. The bellcrank is mounted at a point measured back from the leading edge about 35 percent of the wing chord. The C.G. is at a point about 25 percent back of the leading edge. The lead guide is mounted so that lead wires sweep back 1/4" at lead guide. This keeps nose pointing out.

Select a level field and inspect the flight circle for any rocks, etc. that may cause trouble in taking off and landing. Instruct your mechanic helper on arm signals for releasing ship. Hook-up your flying wires and place control handle at center just as it will be used for flying. Start your motor and run it up to top R.P.M., then take your place at control handle. Raise your free arm, which is the prearranged signal, and when you are sure everything is ready drop the upraised arm. The helper should hold the ship with the nose pointing out about five degrees for taking off. Let the ship run on ground to gain speed and as it gets about 25 to 33 percent around the circle, give it up elevator and climb about ten or 15 feet before leveling off. Go around a few laps to acquaint yourself with handling characteristics of the ship. When you are sure of its response you can try some simple maneuvers. As the motor nears the point of running out of fuel, level the ship and keep it this way until it conks, then nose down to keep flying speed and bring it in for a nice rolling landing. With a little practice you can learn to make a three-point landing by using a little up elevator just before ship touches the ground. Just like flying a big ship. END

We Test The Senior

(*Continued from page 23*)

necessary to trim in spots. Before cementing ribs in place, put cement on the rib and main spar areas that will be against each other before finally locking ribs in place. This will make for a much stronger bond. Also use additional cement as prescribed in plans. Handy-tip: lay the leading edge spar along the main spar, mark the position of the ribs and cement that in place before the trailing edge to prevent the main spar from being pulled out of place. Slip trailing edge of ribs into the notches and check for length. Trim ends of ribs if necessary. After cementing the two sections of the trailing edge together, check for alignment before setting up to dry. The leading and trailing edges should be straight and the ribs an equal taper top and bottom from the center out.

Wetting the outside of the leading edge sheeting when cementing takes the strain off the wood and helps prevent warping. The reader may have found that most wings seem to be weakest at the corner formed by the center section planking and the leading edge planking. By replacing a section, about 1-1/4" wide, of the center section planking next to the leading edge, making that piece about 1-1/4" longer on both sides and rounding that corner, considerable strength can be gained. While not essential, this procedure will help any stunt model.

As another handy hint, cut a small notch in the hardwood spar of the elevator to make the control horn flush with the front. Also by so doing, it is possible to slip the control horn on later, thus making it possible to assemble the stabilizer and elevator on a flat surface.

If you decide to solder the clips to the landing gear mounting eyelets as suggested in the plans, use a nut and bolt to hold the clips tightly in position and it is not necessary to have them on the firewall while soldering. Whereas the plans show screws for mounting the engine and the bellcrank, bolts may be substituted if desired.

Before putting on the first side, we gave the fuselage a coat of Testor's clear *Sta* for additional strength of the wood, but not on the areas to be cemented; also we mounted the motor at this time as we happened to use bolts and wanted to put cement on the nuts. We also gave the motor additional offset with wedges under the motor, although this is not really necesary. If you are going to make a hatch for access to the motor (it is recommended) the motor may now be taken out and set aside until the plane is near completion.

In fitting the sides we beveled them first, then cutting and sanding very little at a time, refitted for a perfect fit. It will pay in looks and strength to do this slowly and well. Be sure to keep the wing and tail slots lined up while fitting. In cementing on the side, we found it easiest to put cement on the keel and edges of the bulkheads, press the side into position, then

(*Continued on page 46*)

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"BALANCED POWER"
GLOW FUEL
FOR SMOOTH, NITROMIC POWER
POP BANG! UNCONTROLLABLE TOP R.P.M.
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"I USE SPUTTER-JUICE.... WITH CARBON, GUE AND AMYL ACETATE!"
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Use NITROMIC POWER for LEADERSHIP — for CHAMPIONSHIPS— for QUALITY — for Carbon Free, Smooth, PEAK PERFORMANCE.
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1619 THIRD AVE. LOS ANGELES CALIF.

remove, so that the cement marked the side where it came in contact with the keel and bulkheads. Should the side not pull down tightly, dip a paint brush in water and wet those spots.

If you make an engine and tank hatch, which we recommend, you can put on the right side of the body before putting on the stabilizer and rudder. Handle it the same as the first side, cementing up to and including the firewall. When the cement is dry, cut the front section off at the firewall and use that section for the hatch covering. In making the hatch, we found it easiest to make two half plywood bulkheads the same size as the right half of the firewall and F-2 bulkhead. We also cut the nose block in half at the keel. By cementing these into position on the hatch cover previously cut off so they would slide in just ahead of the firewall and F-2 bulkhead, we held the sheeting rigidly in place. After this hatch cover was cut out to receive the engine, we covered both the hatch and the left side of the nose with *Silkspan* for strength. The hatch can be held in place by making a plywood disc fitting the nose of the plane and cementing only to the front of the hatch; two small screws into the left side will hold it in place. Drill oversize holes for these screws and set them in cement, not just in the balsa. Small screws at an angle at the back of the hatch and into the firewall can be used to hold in rear.

This ship is set up to fly counter-clockwise. If you are a clockwise flyer, offset the wing on the opposite side (it is an unbalanced wing), reverse the bellcrank, lead-outs, outboard weight, offset of engine, control horn, pushrod, rudder, tank, hatch.

Our *Senior* came through the AMA stunt pattern with flying colors and held like a veteran in the overhead eights, the acid test of any stunt ship. It looks nifty too—trim lines, realistic in flight, particularly without the landing gear.

Ringmaster

(*Continued from page 24*)

edge may be added. The hard wood bellcrank mounting block should be drilled and fitted between the center ribs. Install the bellcrank, pushrod and run the lead-out wires through the left half.

Complete the I-beam spar at this point by adding 1/16" sheet balsa compression members between the upper and lower spars and snugly between the ribs. Cover the leading edges and center section with 1/16" soft balsa and carve the tips from solid blocks. Hollow the left tip only and cement both tips in place after running the lead-out wires through the aluminum tubing.

Rudder, Stabilizer and Elevators: The rudder and fairing are cut from 3/16" medium balsa and sanded to shape. Stab and elevators are made of 1/4" sheet balsa and shaped to a symmetrical section. The .040-dia. wire control horn is formed and cemented to each elevator half and the hardwood strip, with silk or aircraft fabric cemented over it.

Fuselage Assembly: Cut out all the formers required and bend the landing gear from 1/8" wire. Assemble the landing gear to the firewall and begin the final assembly by slipping the fuselage sides on the wing, as shown in the sketches. Bring the two sides in and slip the firewall and former #4 between them. Center the fuselage on the wing and cement together. Lay the structure on a flat surface and allow to dry.

Now, add the plywood nose ring, #1 and the remainder of the fuselage formers, slipping them over the pushrod and at the same time adding the plywood fair-lead to former #5. Locate your engine in the nose, drill out the mounting holes and solder four nuts to the underside of the mounts. The fuselage is now planked, the sheet bottom added and the nose and cowl blocks carved and fitted in place. The cowl should be hollowed to suit your particular engine and gas tank installation.

Lay the stab and elevator assembly in place on the rear of the fuselage and solder the pushrod to the control horn. Check the con-

trols for freedom and sufficient movement. The stab is securely cemented to the fuselage and the rudder and fairing added. Sand the fuselage industriously and cover the entire ship with *Silkspan* or silk. The cowl alignment pins should be located and installed in addition to the cowl hold-down bolt.

Make the tank from .008 thick shim brass as shown on the drawings or select a commercial tank of the correct size. The tank is held in place with wood screws as shown on the drawings. For appearance, wheel pants and gear fairings are hard to beat. Properly made and installed, they will take a lot of contest punishment and still add sparkle and class to the old wagon.

Finishing: Two coats of wood filler with a fine sanding between coats will enhance the beauty of your version. Several coats of colored dope will give a light and durable finish. Cement a bubble canopy of generous size over the cockpit and fair the edges with a strip of silk. To simplify our trimming problem we chose Hobby Decal *Checkerboard* with *Trim Film* stripes. Two coats of Stanzel's *Tuff* hot-fuel proofer were used to protect the finish. The original ship sports a black-and-white paint job with red plastic spinner and trim.

Flying: The model should balance near the wing spar and requires about one ounce of weight in the right wing tip. Initial flights may be attempted on .012 dia., 52' lines that are lengthened to 65' for all-out air work.

Sweden Wins Wakefield

(*Continued from page 27*)

some most interesting new design trends.

The long fuselage designs—which accommodate single skein motors 50 to 55 in. taut between hooks when unwound—have tremendous possibilities for real still air flying. They are just that bit inclined to get upset in turbulent air however which can pull the overall flight time right down. But for normal rate of climb, and particularly glide performance, they impressed everyone with an experienced eye. In fact, reports of phenomenal glides on the evening before the contest led to a most involved argument amongst some other nationals as to whether or not it was optical illusion on account of the size of the fuselage! It seemed impossible that any Wakefield should glide so flat and sink so slowly!

There was also another very interesting point about the American models. Foster's 60 in. fuselage job, for example, had a complete structural weight (including prop) of only 90 grams, which many other modellers found difficult to believe. Fuselage was 1/8 sq. with Warren-girder 1/8 x 1/16 bracing, and most other spar sizes 'normal.' A European airframe built to similar specification could be expected to weigh at least fifty per cent more.

Taking into account the fact that Foster is an indoor builder, and therefore a real expert in lightweight construction, there is still a margin of weight to be accounted for. This, almost undoubtedly, is in the density of the balsa wood available in America. For the same strength the American modeller can undoubtedly obtain lighter wood of the same overall dimensions.

This can be a great advantage next year. The 1951 American team more or less designed their '1952' model on the way back to England in the airplane. It is to have a long fuselage, but with the motor terminating about two thirds of the way back. To get a long motor, and use it taut between hooks return gears are called for. The long rear fuselage, virtually a tail boom, will make it possible to use a small stabilizer area and get more into the wing. In other words, the '1952 design' is to combine the best features of the return gear model (which at present averages about 39 in. fuselage length) and the long fuselage single skein job.

American modellers can take the credit for having the courage to produce the very long fuselage Wakefield and show that it really can work. It has set a lot of people thinking on the other side of the Atlantic now. The first mention of return gears, too, came in an early Ziac's Yearbook, although Ellila must take the credit for having emphasized their worth in winning the Wakefield two years running. An American model at least justified itself this year in placing fifth and the subject is one which is currently receiving a lot of attention in England. Unfortunately two of the leading British 'gear-proponents' did not make the 1951 team and so it is really impossibly to judge their respective merits. All the data available, however, points to the fact that a motor taut between hooks is superior to one which is corded or spring tensioned—and the only way to get a long motor in a reasonable fuselage length and keep it taut between hooks is with return gears.

There is plenty of food for thought in the design of 1952 Wakefields and it seems that the real need now is not for a five minute still air model but a high-time model which will produce a consistent performance in still air and winds, *with no appreciable thermal assistance*. That, it appears, is going to call for fast prolonged climbs followed by a really good glide, but not so near the stall that turbulent air can upset it. All the European contestants will be looking forward with real interest to see how American designers are going to produce the answers to those questions for the 1952 contest in Sweden.

Weather summary:

First round, starting 7:30 *p.m.*
Calm to 100 ft., slightly turbulent air above, with drift 4-5 m.p.h. Slight but appreciable 'lift' at good heights.

Second round, starting 9 *p.m.*
Similar wind conditions, cooler, no appreciable 'lift.' Dampness setting in, but not excessive.

Third round, starting 3 *a.m.*
Overcast sky, windy—15-20 m.ph. at 100 ft. and above.

Model designs:

Almost exclusively slabsider. No startling design trends, except for American models. Diamond and rectangular section about equally favoured. Fuselage lengths slightly longer, on average, than 1950. A fair proportion of modellers used gears, but not as many as anticipated. More folding propellers than freewheelers, but higher proportion of freewheelers in the top places. Very few examples of feathering propellers. END

Fokker E-1

(*Continued from page* 38)

haust gasses could be expelled and to provide a minimum chance of accumulating inflammable liquids. It was attached by a double steel wire "strap" which ran the circumference of the cowl and was buckled to fittings on the front end of the lower longerons. The flat sides of the fuselage immediately behind the cowl were aluminum covered to about the middle of the cockpit. The circular form of the engine cowling was diminished to flat, by formed sheet aluminum skirts extending from the rear of the cowl to the leading edge of the wing. These members were detachable and had access doors where needed.

Fokkers *E-II* and *E-III* both were armed with a single air-cooled Spandau machine gun. This weapon was mounted in front of the pilot to the right of the ship's vertical center line. Ring and bead gunsights were used.

Behind the engine was a divided tank, one partition containing castor oil, the other serving as a gravity-fed auxiliary tank. The main fuel tank was located behind the pilot, provided with a filler cap about flush with the top fuselage surface, and a drain cock at the bottom. This was a cylindrical tank which fit sideways in the fuselage. Fuel from this tank was fed to the engine under air pressure provided by mechanical and hand-operated pumps. Mechanical air pumps were both engine driven and wind-driven; the hand pump was of the flit-gun variety and used for emergency air pressure. An intricate plumbing system of air pressure and fuel lines kept the engine running—most of the time. Ignition was provided by an engine-driven magneto according to the custom of the time.

Instrumentation generally was poor on all W. W. I German airplanes. The Fokker *E-II* and *E-III* were no exceptions. No airspeed indicator was fitted. Neither was there an instrument panel, as such. A plywood board at the pilot's right carried the fuel flow vial, air pressure guage, controls for the mechanical or manual air pressure lines and the throttle valve off-on control. In front of the pilot was the ammunition belt full- and empty-box (spent cartridges were dropped from the plane) with an access door to permit loading from the cockpit. The door also doubled for a map holder—these planes still were primarily reconnaissance scouts.

To the pilot's left, attached to structure, were an oil guage and an altimeter. Near the floor on his right was the manual air pressure pump. The control stick head had two fore and aft horizontal handles to be gripped by either or both hands, and thumb-operated machine gun trigger and "contact" button. The pilot's seat was a formed aluminum bucket affair attached to the fuselage by steel tubes and adjustable vertically.

Landing gear—This member was a rather complicated maze of struts which served the double purpose of supporting the main wheels and at the same time incorporating the lower anchorage structure to which the wire wing racing was attached. Details can best be obtained from the accompanying drawings and photographs. The tail skid was sprung on rubber cord, and the skid arm pivoted on an inverted pylon of steel tube struts which also served as a support for the horizontal stabilizer.

Empennage—Throughout Fokker's designs, we find the mark of a man interested in solving production problems the easy, practical way. That is why he used a variety of materials in his planes—the best material for the specific purpose. Fokker *E-II* and *E-III* tail assemblies were identical. Steel tubing, welded together, was used exclusively. These members were aerodynamically balanced and fabric covered. The rudder was "comma"-shaped, and the elevator trapezoidal. There were no fixed empennage members.

Wing structure—Wings were of constant chord and with positively raked tips, giving a greater span at the trailing edge than at the leading edge. This was to provide

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greater flexibility along the trailing edge, thus giving effectiveness to the wing-warping method of lateral control used.

Spanwise members of the *E-II* and *E-III* wing were the two spars made of ash, milled out to an "I" section. Ribs were made of poplar. Leading and trailing edges were of wood. Inter-spar bracing consisted of steel tube compression members and cross-bracing of steel wire. Wing tips also were made of thin wood, cut and formed to provide the proper flexibility demanded by a wing-warp lateral control system. The wing was made in two pieces with thirteen ribs on each side, including the stub rib.

Wings were braced by a total of sixteen cables—eight top and eight bottom consisting of: eight top and bottom attached to the leading spar permanently, and eight top and bottom attached to the rear spar. The latter were run through a pulley on the overhead pylon, continuing beneath the wing to a system of control horns attached to the rear of the landing gear. The foreward spar cables, permanently attached to the overhead pylon, or cabane, continued on the underside to the forward part of the landing gear. Examination of the drawings will make this clear.

In addition to the cables, the right and left wing spar panels were attached to the fuselage by tubular fittings, which also served to expedite transport in a dissembled condition. For some reason, the Germans did not fly their aircraft from factory to front line squadrons, but depended on motor trucking, railroad flatcar, or towing behind a light truck. Accordingly, all their planes throughout W. W. I were easily taken down, and were designed to meet these transportation specifications.

Performance—While the Fokker *E-II* and *E-III* proved valuable to the German Air Service, their success was largely due to the fact that they had no opposition. In terms of combat specifications that eventually were developed, they were notoriously weak. They simply were not designed for combat flying! Early victories made on these Fokker monoplanes by the early German aces were simply a matter of flying up behind an unsuspecting enemy and letting him have a burst from the still "secret" synchronized machine gun mechanism. Actually, the *E-II* and *E-III* were not capable of prolonged power dives; their air endurance was limited to about 1½ hours, and their speeds were low. Top speed of the *E-II* and *E-III* varied from 86 to 90 mph. Their rate of climb and ceiling were little improved over the *E-I* but nevertheless, men like Boelcke, Immelmann and Udet were able to exact terrific tolls of the unprepared enemy.

It is interesting for historical and military aviation students to note that once the Allies perfected the synchronized machine gun, the odds became even and the actual airplane design proved the deciding factor. That is the point at which Germany lost her advantage and the rudiments of scientific air-warfare were born.

As far as flying ability was concerned, the Fokkers *E-II* and *E-III* had it. Wing warping permitted "hands-off" flight because they were properly designed in the first place to include the characteristic of inherent stability. In the maneuverability category, they were very good. Lightly loaded—for the time—they were stunters of the first water, based on Fokker's 1913-1914 "looping monoplane designs." They took off very quickly, and landed slowly—about like a Cub.

But their structural strength still is a matter of question, historically. It still has not been definitely determined whether Lt. Max Immelmann was killed in a Fokker *E-III* because of: 1. being shot down by the R.F.C.'s Hawker; 2. being hit by an artillery shell; 3. because he overstrained his ship and structural failure resulted.

Whatever the cause of his demise, it can be said that Immelmann was the greatest exponent of the Fokker monoplane the German Air Service had to offer. Whatever performance qualities it had he used to the best advantage in gaining his victories.

The Fokker *E-IV* was Fokker's attempt to compete with the Albatros *D.I*, which seemed to be favored by a supply of Mercedes 160 hp motors. Historically, Fokker was unable to get the 160 Mercedes, and he equaled the power by utilizing the Oberursel U III, 160 hp rotary engine. This was a 14 cylinder engine, made up of two banks of 7 cylinders, and the fore-runner of our modern twin-row radials. He designed an airplane a bit larger than the *E-II* and *E-III*, called it the *E-IV*. But the *E-IV* Fokker was more than just a development in the line. Immelmann's success on previous types led authorities to demand from Fokker a "super plane" specifically for Immelmann. The original *E-IV* was noteworthy for its battery of three Spandau machine guns.

Immelmann's *E-IV* proved unlucky for him although he gained two victories on it. On one occasion, the synchronizing gear went out of whack and he shot off his propeller. The vibration shook loose his engine, except for one oil line, which prevented it from dropping completely out of the plane. Fortunately he landed safely in this condition, but never flew the ship again. He was killed in a Fokker *E-III*.

The *E-IV* design, however, reached limited production and was built as the first, or one of the first two-machine gun pursuits. With the 160 Oberursel it attempted to compete with the 160 hp (Mercedes) Albatros D.I, but the advance of the latter was too great. Very few Fokker *E-IVs* were built.

E-IV wing span was 33 ft. even; length over all was 24 ft. 10 in. Bare weight was 1025 lbs. and weight loaded was 1,590 lbs. High speed at sea level was 99 mph, and rate of climb 3,300 ft. in three minutes; 6,600 ft. in eight minutes; 9,900 ft. in fifteen minutes and 13,200 ft. in twenty-five minutes.

Perhaps there should be some sort of permanent legend around the 1915 Fokker monoplanes. There certainly was a legend about them when they were in their prime. To them can be attributed the foundation of aerial warfare as the basis for today's tactics.

And because of the Fokker monoplane, Allied designers were forced to design better planes to counteract it. Actually, Fokker's synchronized machine gun was the trick that turned the tide. If the Fokker monoplanes are remembered for no other reason, it will be because they changed the thought of many armament engineers and aircraft designers from an idea to a concept.

Pen-Pals

J. Backwell, 57 Maude St., Geelong, Victoria, Australia, would like to write to anyone interested in all types of free flight models . . . David G. Batty, 216 Stanley Rd., Wakefield, Yorkshire, England, wants to correspond with someone who likes flying scale models, both free flight and controline; he is also willing to swap an English Diesel engine . . . Jaime Fabrega, Box 195, Panama, Rep. of Panama, wants to hear from modelers who prefer stunt flying . . . Rick Tomkins, 33 Redthorn Grove, Stechford, Birmingham 9, England, wonders if he can swap views with someone favoring power models . . . P. Shield, 13 Elmore Rd., and J. Moseley, 4 Acacia Rd., both of Enfield, Middlesex, England, want to exchange magazines, kits and plans.

EXCHANGE MOTORS: Jere Allnoch, Box 5179, N.G.C., Dahlonega, Ga., wants any A or B motor in fair condition in exchange for an .039 *Cub* engine and Scientific *Little Devil* . . . Joseph Celea, 203 May Ave., Collins Pk., New Castle, Del., wants to trade his O & R *23* for an *.074* or *.099* engine . . . Noble and Donald Glandell, 4941 No. St. Louis Ave., Chicago 25, Ill., have a ½ A *O.K. Cub*, O & R 23 and *.19* which they want to trade for an old Class A airplane motor, not larger in displacement than .200, or an .074, .099, or .199 motor . . . Billy Nelson, Box 203, Gibsonville, N. C., wants to exchange a *Baby Spitfire* .045 for a *Cub* .074 . . . Arnold Nowell, 23 Williams Ave., Hyde Park, Mass., has been searching for a Campus *A-100* . . . George Thrift, 1832 Wilkins Ave., Baltimore 23, Md., would like to exchange a *Dennymite* (60) for a McCoy *Baby Mac*, *.09* or *19*.

AMA News

(*Continued from page 30*)

occurs for which the club is liable or allegedly liable?

Answer: Yes. Individual members may be held financially responsible and are protected by the policy.

3. Does the policy pay investigation and legal costs?

Answer: Yes, the policy pays all costs of investigation of claims presented, together with any legal expense, and pays this *in addition* to the policy limit.

4. What are the policy exclusions?

Answer: The policy does not cover operation of motor vehicles (other than model aircraft), injuries to employees (Workmen's Compensation Insurance), structural alterations or new construction, liability assumed under contract or agreement, unless the policy is specifically endorsed. Also water damage, property in the care, custody, control, or owned by the club or members thereof.

5. Would the Insurance Company pay anyone injured?

Answer: Not necessarily. It depends upon the circumstances which are based on the Law of Negligence. When a claim is presented, notification should be given to our office, at which time a thorough investigation will be made by the Company. If responsibility for the accident is shown to rest with the club, the company would proceed to make a fair settlement. If this is not shown by their investigation, full cost of defense, including any court trial expense, is provided by the company.

6. Does the insurance cover claims arising out of accidents to spectators or passers-by?

Answer: Yes. (As discussed under No. 5).

7. Would it cover claim made by a spectator for damage to his automobile allegedly resulting from a club or chapter activity?

Answer: Yes. The policy would protect the insured group as outlined under No. 5.

8. Should the club or chapter buy high limits?

Answer: Yes, it is always advisable to carry high limits of legal liability protection—the additional cost is small—and verdicts are more and more generous.

Groups already AMA Chartered should write directly to Heber Smith Morris, corner Pitt and Cameron Sts., Alexandria, Va., for additional information. To have your group chartered, write to AMA, 1025 Connecticut Ave., Washington 6, D. C.

NATIONAL AMA RECORDS ESTABLISHED. *Gas Models, Controline Speed, Class C Open*—132.30 mph. Record established by Robert L. Cowles, Jr., Green Bay, Wisc., on July 1, 1951 using a McCoy 49 powered *Hell Razor*. Prop used was a Rev-Up 9D x 11P thin blade.

Towline Gliders, Class D Open—21:09.0. Record established by John Dooley, Crossville, Tenn., on June 23, 1951, using a Jasco *Floater*.

Outdoor Unlimited Rubber Models, Junior—3:39.2. Record established on June 24, 1951 by James Joseph Zimmerman, Cedar Rapids, Iowa, using a *High Performance Sportster* designed by C. R. Johnson. Plans were originally in MAN.

Free Flight Gas Models, R.O.W., Class AA Open—6:36.8. Record established by Robert L. Holland, Sunland, Calif., on July 1. Model used was the 1948 third place Wakefield winner converted for the *Wasp .049* used and floats. Float arrangement was two main front floats and one tail float.

Free Flight Gas Models, R.O.W., Class A Open—12:05.6. Record established by Sal Taibi, Long Beach, Calif., on July 1, 1951 using an original design powered by an Arden *.099*. Taibi's model had a cabin type fuselage, 354 sq. ins. wing area, 150 sq. ins. stabilizer area, two main front floats and a tail float.

Free Flight Gas Models, R.O.W., Class AA Junior—1:05.0. Record established by Jerry Brown, Pasadena, Calif., on July 1, 1951 using an original design powered by a *Wasp .049*. Brown's model, known as the *Freek* had a 39" wing span, 30" fuselage length, one main front float and two tail floats.

Free Flight Gas Models ,R.O.G.-Type, Class AA Open—28:27.0. Record established by Edward S. Gilkey, Central Point, Oregon on June 24, 1951. Ed's model was an AA *Zeek* powered by a K & B *.049*.

INTER-CLUB COMPETITION. In the early part of the season, the *Rochester Model Aircraft Association* (New York) got together with the *Buffalo Flying Bisons* in Buffalo to hold the first of a series of inter-club contests. For the contest, each club chose a five-man team for their representatives. Each of the team members were allowed to fly any or all of the official AMA events so long as he had at least one competitor from the opposing team. As there were actually only ten contestants, the remainder of both clubs acted as mechanics, timers and rooters so there was enough time and personnel to conduct the contest in rather a leisurely manner, permitting each contestant to his best. The sportsmanship displayed by both clubs was wonderful!

The atmosphere at these contests is that of an enjoyable Sunday afternoon's flying with the zest of a real competitive sport to top it off. The best thing of all about the inter-club contests is the team-work displayed in working together and helping each other—a spirit that is lacking in many organizations. Perhaps this type of competition will help make a club a stronger unit working for a common cause.

For those of you who would like to try this activity, John F. Wolff, President of the *Rochester Model Aircraft Assn.*, has prepared an outline of the procedure and rules which, by all indications, appear workable.

1. The Buffalo club and the Rochester club had two joint meetings where it was decided to spend $30.00 on two trophies with each club bearing half of the expense. Also the size of the teams was decided and it was decided that the AMA rule book would be the authority for the events. Furthermore, it was decided there would not be an event unless there was an entry from each team.

2. The tropies are to be one large and one small—both perpetual. At the end of each meet the club having won that particular meet will take possession of the small trophy until the following meet. At the end of the year the points won by both clubs will be totaled and the club having the highest score for the year will gain possession of the large trophy during the following year. The club winning the large trophy for the most times over a period of years will retain it permanently. The number of years will be determined by the room for engraving on the trophy, probably about five.

3. Before the flying starts, each team member registers the events he has come equipped

to fly. This way the officials can tell in a few moments what events are to be held and the judges and timers are assigned.

4. Points are awarded as follows: 1st place in any event—three points, 2nd—two and 3rd—one.

5. As many of these meets will be held a year as reasonably possible.

An interesting sidelight to the contest is the fact that the clubs (both of them) are seriously practicing events that the opposing club are weak in, showing the contests are really being taken seriously.

The *New York Aero Nuts* which boasts of charter members such as Pete Andrews, Frank Ehling, Sidney November, Paul Plecan, Bernard Shoenfeld, Stan Stanwick, and Frank and John Zaic, just to name a few, is having a membership drive. To hear the names we've just mentioned, you'd think the *Aero Nuts* were a bunch of hot shots. Well, they are but the requirements for admission to the club have now been altered to allow comparatively inexperienced modelers *who want to learn to fly to join.* Why don't you contact Stan Barbakoff, President of the *Aero Nuts,* 39 Scholes St., Brooklyn 6, N. Y.?

CONTESTS

SEPTEMBER

2—*Medina, O.* Class AA Second Annual Medina Model Meet for all outdoor events excepting TR and Jet. R. W. Housley, Contest Director, 2190 23rd St., Akron 14, O.

2—*Salem, Ore.* Class AA Salem Model Airplane Club 13th Annual Meet for FFG and OR. Elmer J. Roth, C.D., 2080 Market St., Salem, Ore.

2—*Phillipsburg, N. J.* Easton-Phillipsburg Plymouth Meet for FFG, CL, CLS, and CLFS. William Lehman, C.D., 47 East State St., Doylestown, Pa.

2—*Taft, Calif.* Taft Record Trials for FFG. Francis Stewart, C.D., 900-21, Bakersfield, Calif.

2 & 3—*Pawtucket, R. I.* Class AAA All New England Model Meet for CL, CLS, CLFS, FFG, OR, and TR. Arthur C. Bergeron, C.D., 55 Ricard St., Seekonk, Mass.

2 & 3—*Waterloo, Ia.* Class AA Waterloo Prop Twisters' Model Meet for CL, CLS, CLFS, FFG, HLG, TLG, and RC. Kenneth Satterlee, C.D., 1146 West 12th St., Waterloo, Ia. Pending.

3—*Far Hills, N. J.* Class AA Bedminster-Far Hills Lions Club 4th Annual Control Line Meet for CL, CLS, and Beauty events. James T. Christian, C.D., Dunwalke Farm, Far Hills, N. J.

3—*Morganton, N. C.* Class AAA North Carolina Recreation Society Model Plane Contest for CL, CLS, and CLFS. Entry is restricted to members of the North Carolina Recreation Society. John T. Vogler, C.D., 131 W. 4th St., Charlotte, N. C.

9—*New Britain, Conn.* Class AAA Connecticut State Championships for CLS, CLFS, and CL. Richard G. Matava, 358 Prospect St., Hartford, Conn., and Michael Adajian, 39 Brooklawn St., New Britain, Conn., C.D.'s.

9—*Akron, O.* Class AA Inter-City Wakefield Type Team Competition. Henry Thomas, C.D., 515 Mohawk Ave., Akron, O.

9—*Chicago, Ill.* Class AA Chicago U-Liners' 5th Annual Open Contest for CL and CLS. R. F. Antrim, Jr., C.D., 10752 South Washtenaw, Chicago 43, Ill.

9—*Doylestown, Pa.* Class AAA Doylestown Model Airplane Contest for CL, FFG, CLS, and CLFS. William Lehman, C.D., 47 East State St., Doylestown, Pa.

9—*Bakersfield, Calif.* Bakersfield Record Trials for all classes of FFG. Francis Stewart, C.D., 900-21, Bakersfield, Calif.

16—*Visalia, Calif.* Visalia Model Airplane Assn. Record Trials for all classes of FFG. Emory O. Hull, Jr., C.D., P. O. Box 284, Ivanhoe, Calif.

16—*New York, N. Y.* Class AAA Tenth Annual Prop Spinners Northeastern Championships for OR, FFG, and RC. William Fletcher, C.D., 8708 Grand Ave., Elmhurst, L. I., N. Y.

23—*Harrisburg, Pa.* 7th Annual Pa. State Exchange Club Meet. Entry is restricted to residents of Penna. Write to Howard J. Aldworth, 102 West Market St., West Chester, Pa., for information. Pending.

OCTOBER

6 & 7—*Woonsocket, R. I.* Class AA Flying Fools' Fair for OR, FFG, CL, CLS, and TR. Thaddeus W. Wenclawik, C.D., 58 Providence St., Woonsocket, R. I.

13 & 14—*Los Angeles, Calif.* Class AAA All Western Open Model Aircraft Meet for indoor, outdoor free flight, and control line events. Tom U. Engleman, C.D., 2459 Heliotrope Dr., Santa Ana, Calif. Pending.

14—*Bakersfield, Calif.* Bakersfield Record Trials for FFG. Francis Stewart, C.D., 900-21, Bakersfield, Calif.

21—*Visalia, Calif.* Visalia Model Airplane Assn. Record Trials for FFG. Emory O. Hull, Jr., C.D., P. O. Box 284, Ivanhoe, Calif.

NOVEMBER

11—*Bakersfield, Calif.* Bakersfield Record Trials for FFG. Francis Stewart, C.D., 900-21, Bakersfield, Calif.

18—*Visalia, Calif.* Visalia Model Airplane Assn. Record Trials for FFG. Emory O. Hull, Jr., C.D., P. O. Box 284, Ivanhoe, Calif.

DECEMBER

9—*Bakersfield, Calif.* Bakersfield Record Trials for FFG. Francis Stewart, C.D., 900-21, Bakersfield, Calif.

16—*Visalia, Calif.* Visalia Model Airplane Assn. Record Trials for FFG. Emory O. Hull, Jr., C.D., P. O. Box 284, Ivanhoe, Calif.

28, 29, and 30—*Orlando, Fla.* 2nd Tangerine Internationals. Pending.

Key to listing of events: FFG—Free Flight Gas; CL—Control Line Speed; OR—Outdoor Rubber; TLG—Towline Glider; IR—Indoor Rubber; OHLG—Outdoor Hand-Launched Glider; IHLG—Indoor Hand-Launched Glider; CLS—Control Line Precision (Stunt); CLFS—Control Line Flying Scale; RC—Radio Control; TR—Team Racing.

Contests designated "Pending" mean the application is before the proper authorities as we go to press; "Record Trials" mean no prizes, but a chance at cracking the records; "Class A" is a meet with restricted entry; "Class AA" is a meet with unrestricted entry; "Class AAA" is a state-wide or regional meet; "Class AAAA" is a national or international meet. END

showed you in April, 1951) made its first public flights at the Paris Salon l'Aeronautique in mid-June. Those of us who habitually see newsreels on TV got a fine view of those flights. The *Mystere* looks like it has a sweep angle of about 35 degrees or so. Takeoff, and climb after takeoff, appeared good but not exceptional. The high-speed passes, difficult to judge, would rate the *Mystere* up with current fighters. And the French say that the plane has already topped 634 mph., the first French plane to do so. And roll—the *Mystere* corkscrewed its way down the field at a tremendous rate.

RUSSIA

Tu-10—First photo of the Tupolev *10*, twin-jet light bomber of the Red Air Force, shows that the plane is now using small wingtip tanks. These planes are currently reported in squadron service in three versions: a trainer, with the nose solid and no radar or guns; an all-weather model; and a ground-support model. We had a three-view of the *Tu-10* last month on these pages.

Bits and Pieces—The planes featured this month in three-view are the *Pulqui II*, Argentine's jet fighter, and the Morane-Saulnier *731*. We chose the first because the plane has an interesting history; the second, because it was one of the planes exhibited at the big French annual aeronautics display. There is an attempt, in case you hadn't noticed, to make the three-views presented each month the kind of planes that you'd like to model. We try to give you one jet and one prop-driven craft, which between them cover an enormous range of possibilities. The way things are now, it gets harder and harder to find a propeller-driven craft to draw each month. And so here's an appeal—if you have any particular planes you'd like given the treatment, just drop me a line in care of MAN and we'll see what can be done.

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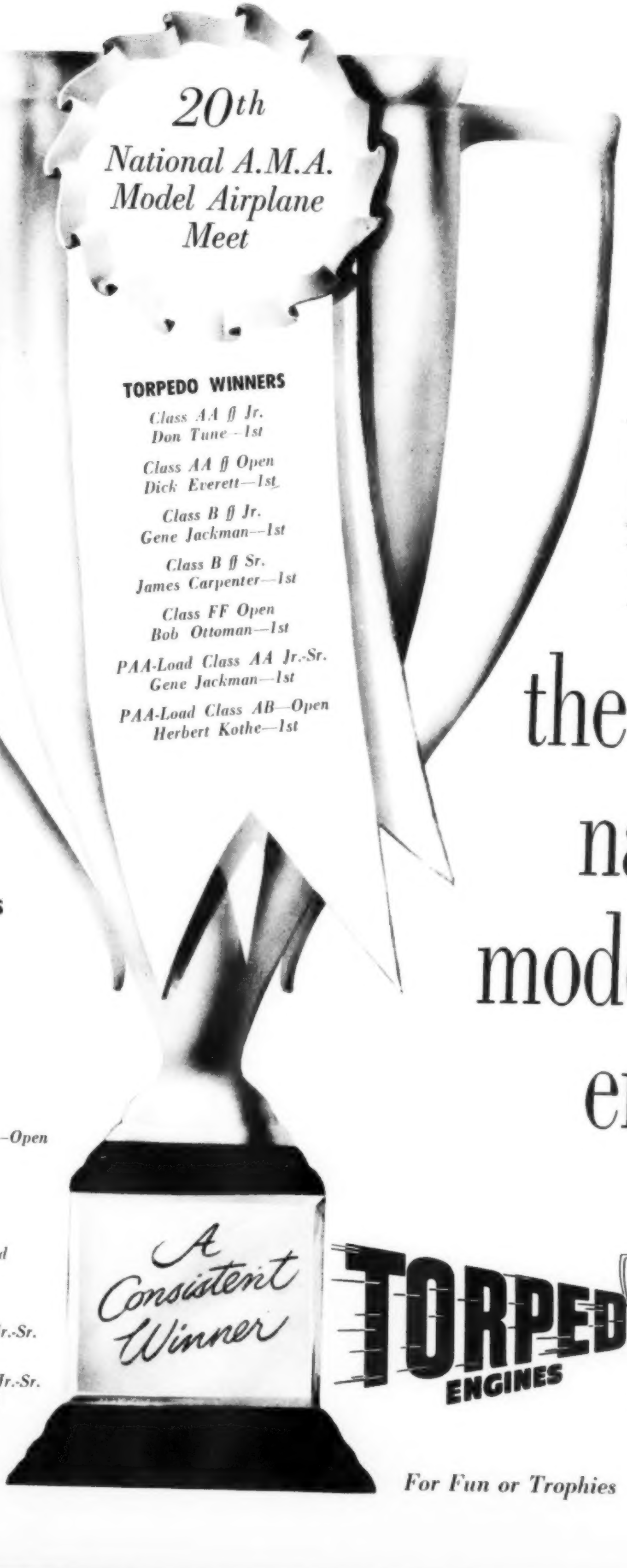

TORPEDO WINNERS

Class A ff Open
Ray Mathews—2nd

Class B ff Jr.
Curtis Franke—2nd

Class C ff Jr.
Curtis Franke—2nd

Class C ff Sr.
John Belote—2nd

PAA-Load Class AB—Open
Sal Taibi—2nd

Class B ff Sr.
Fred Salmon—3rd

Class B ff Open
James Summerset—3rd

Class C ff Sr.
John Ogren—3rd

PAA-Load Class AA Jr.-Sr.
Jan Lowe—3rd

PAA-Load Class AB Jr.-Sr.
James Carpenter—3rd

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